

ARCHAEOLOGICAL INVESTIGATIONS
AT KANOPOLIS LAKE, KANSAS

NATIONAL REGISTER EVALUATION OF
14EW3, 14EW6, 14EW19 AND SHORELINE SURVEY
(1463-1465 ft amsl)

Edited by

Brad Logan



University of Kansas
Museum of Anthropology
Project Report Series No. 100

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US Army Corps
of Engineers
Kansas City District

Contract No. DACW41-97-P-0304
Brad Logan, Principal Investigator
1998

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Museum of Anthropology
University of Kansas
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submitted to

Kansas City District
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Kansas City, Missouri

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April 1998

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The study performed herein by the Contractor for the Corps of Engineers is authorized in the National Historic Preservation Act of 1966, as amended. Accomplishment of this work provides documentation evidencing compliance with Executive Order 11593, "Protection and Enhancement of the Cultural Environment" dated 13 May 1971, and Section 110 of the National Historic Preservation Act.

Funds for this investigation and report were provided by the U.S. Army Corps of Engineers. The Corps may not necessarily agree with the contents of this report in its entirety. The report reflects the professional views of the Contractor, who is responsible for collection of data, analysis, conclusions and recommendations.

Abstract

The University of Kansas, Museum of Anthropology conducted archaeological investigations at Kanopolis Lake in September-October 1997 to determine the impact on cultural resources of a proposed two-foot increase in the elevation of the multipurpose pool (from 1463ft to 1465ft amsl) for water storage reallocation. Three sites that would be affected by the increase were evaluated for their potential eligibility for nomination to the National Register of Historic Places. 14EW3 and 14EW19 are not considered eligible. The upper components of the Thompson Creek site (14EW6) have been buried and/or removed by scouring of the lake during times of flood. The lower components are inaccessible due to inundation and could not be evaluated. Few of the research questions posed in the Scope of Work for the evaluation of these sites could be addressed.

Test excavations at 14EW3 indicated only a peripheral portion of the site remains above the current multipurpose pool. Small numbers of artifacts were found in test units. A larger sample of material, including chipped stone tools and ceramics indicative of Woodland (Keith), Late Prehistoric?, and Protohistoric (Great Bend) cultures were recovered from an eroded context on the beach.

Artifacts were recovered to a depth of about 90cm at 14EW19. Three sherds provide insight to its cultural affiliations. Two small sherds of Geneseo Plain ware confirm a Great Bend component. One sherd of Harlan Cord-Roughened ware points to a heretofore unrecognized Keith variant (Woodland) occupation. The cultural deposits, however, are sparse and show no stratigraphic integrity.

No evidence of 14EW6, the Thompson Creek site, was found in the area where its four buried cultural horizons were first recorded in 1947. It is suggested that the lower horizon(s) has been buried and that the upper ones may have been scoured and/or buried since construction of the dam. The former were not examined due to their inaccessibility through inundation. This site, then, should be monitored periodically in order to protect it until such time as it can be properly evaluated.

Survey of the two foot elevation corridor around the perimeter of the lake encountered only a few findspots consisting of artifacts washed ashore from nearby inundated sites. One of these can be clearly attributed to 14EW12; one is believed to be material from 14EW15; two are artifacts from 14EW16; one (an isolated end scraper) cannot be attributed to any site. One findspot consisting of a biface tip was found beyond the corridor and is believed to be associated with 14EW174. One historic site, 14EW38, was recorded. This site consists of a partially exposed concrete foundation whose burial by recent deposits attests the affect of aggradation since construction of the dam.

Acknowledgements

I would like to thank the following persons and campmates for their dedicated work in the field during the Kanopolis Lake project: Will Banks, Ph.d. student at the University of Kansas, Scott Bossell, Dan Pugh, and Jason Roberts, undergraduates at KU. Many thanks also to Greg Jackson, Salina, and Bill Stone, Kanopolis. They volunteered critical assistance in the field and provided valuable information about local archaeology. Moreover, they were great companions and it was a pleasure to work with them. I also thank Ken Nelson, Kanopolis Lake Project Manager, Dan Hayes and Larry Smith, Rangers, for logistical help during the field work. Will Banks prepared the artifacts in the lab, conducted the artifact analyses, and mastered the GPS technology. I thank Lauren Ritterbush for her contributions to this report, based on her prior knowledge of the Kanopolis Lake Project Area.

Brad Logan, Principal Investigator
Associate Curator, KUMA

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Archaeological Investigations at Kanopolis Lake, Kansas

National Register Evaluation of 14EW3, 14EW6, and 14EW19 and Shoreline Survey (1463-1465 ft amsl)

Introduction

Brad Logan and Lauren W. Ritterbush

Project Purpose

This is a report of archaeological investigations at the Kanopolis Lake Project Area, Ellsworth County, Kansas (Fig. 1.1). The investigations entailed the evaluation of three prehistoric sites (14EW3, 14EW6, and 14EW19) to determine their eligibility for nomination to the National Register of Historic Places (NRHP) and a survey of the shoreline of Kanopolis Lake from 1463 to 1465 ft amsl. A water storage reallocation study of the lake recommended raising the level of the lake to the latter elevation. The survey was undertaken in order to determine what impact this might have on cultural resources within that corridor in the project area. This report presents the results of the project with respect to various research questions, field and laboratory methods, the NRHP eligibility of the tested sites, and the findings concerning the effect on cultural resources of the proposed water reallocation that would affect both the multipurpose and flood control pools.

Previous Investigations

A complete inventory of cultural resources at Kanopolis Lake has not been undertaken. Nonetheless, various projects have involved archaeological investigation of selected portions of the area (Figs. 1.1-3). The earliest professional archaeological attention given to the Kanopolis Lake area dates to 1946. During August of that year Marvin F. Kivett and J. Mett Shippee conducted a preliminary archaeological (and paleontological) reconnaissance of selected portion of the Smoky Hill River valley scheduled to be impacted by the proposed Kanopolis Lake (Kivett 1947- Note: this report has been cited by Leaf [1977], Corps of Engineers Publications [1996], and the U.S. Army Corps of Engineers [1996] as Kivett and Shippee 1947. While Kivett and Shippee conducted the initial survey of Kanopolis Lake in 1946, only Kivett's name appears on the preliminary document). This was undertaken as part of the Missouri Valley Project of the River Basin Surveys of the Smithsonian Institution. The reconnaissance was not systematic and was based largely on reports of local collectors, namely Mr. G. L. Whiteford and Mr. William O. Leuty. This investigation resulted

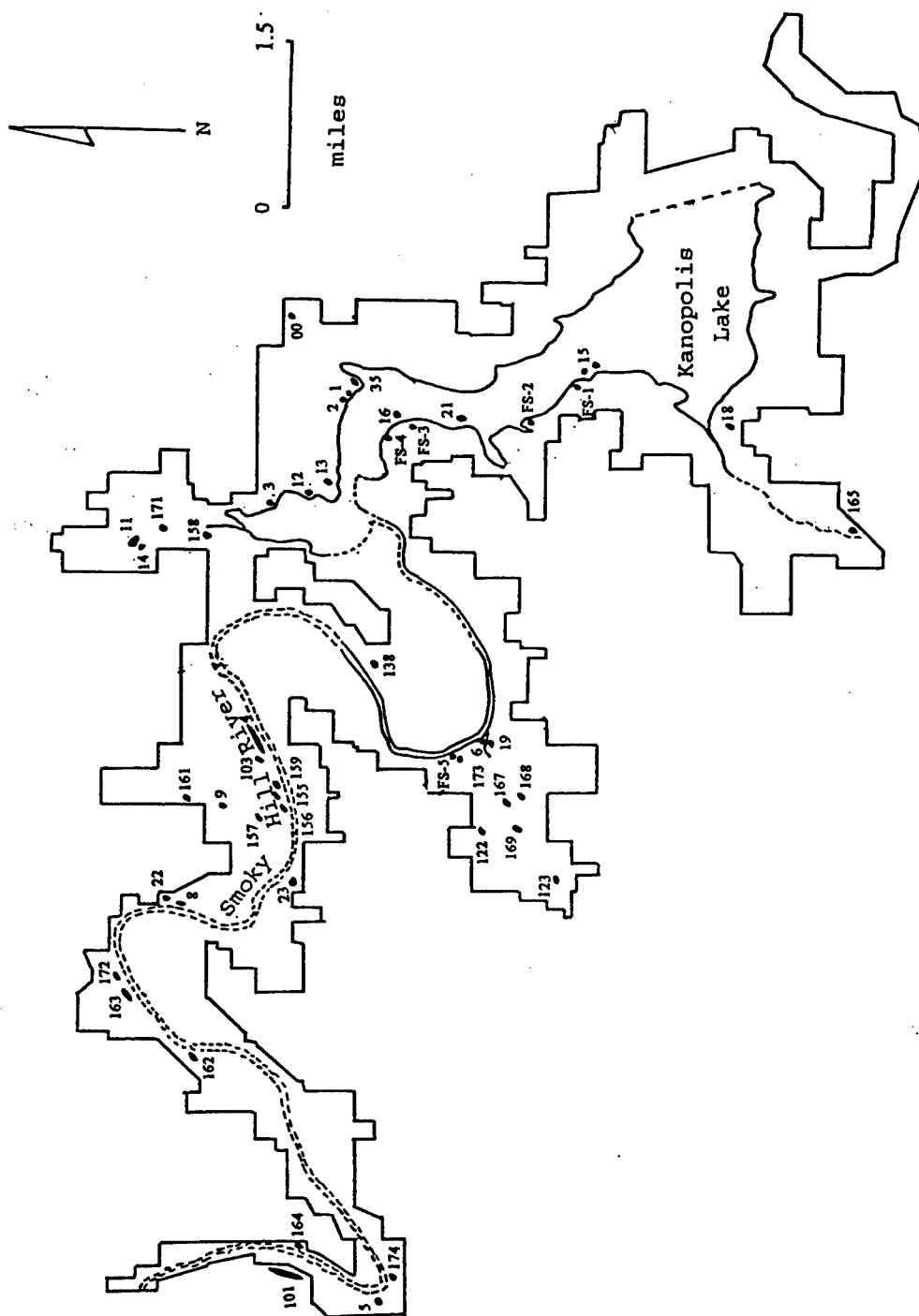


Figure 1.1. Map of the Kanopolis Lake Area Showing Locations of Previously Recorded Sites, and the Sites and Findspots Investigated in 1997. All site numbers preceded by 14EW. Based on Burns and McDonnell 1996:Figures 5 & 14.

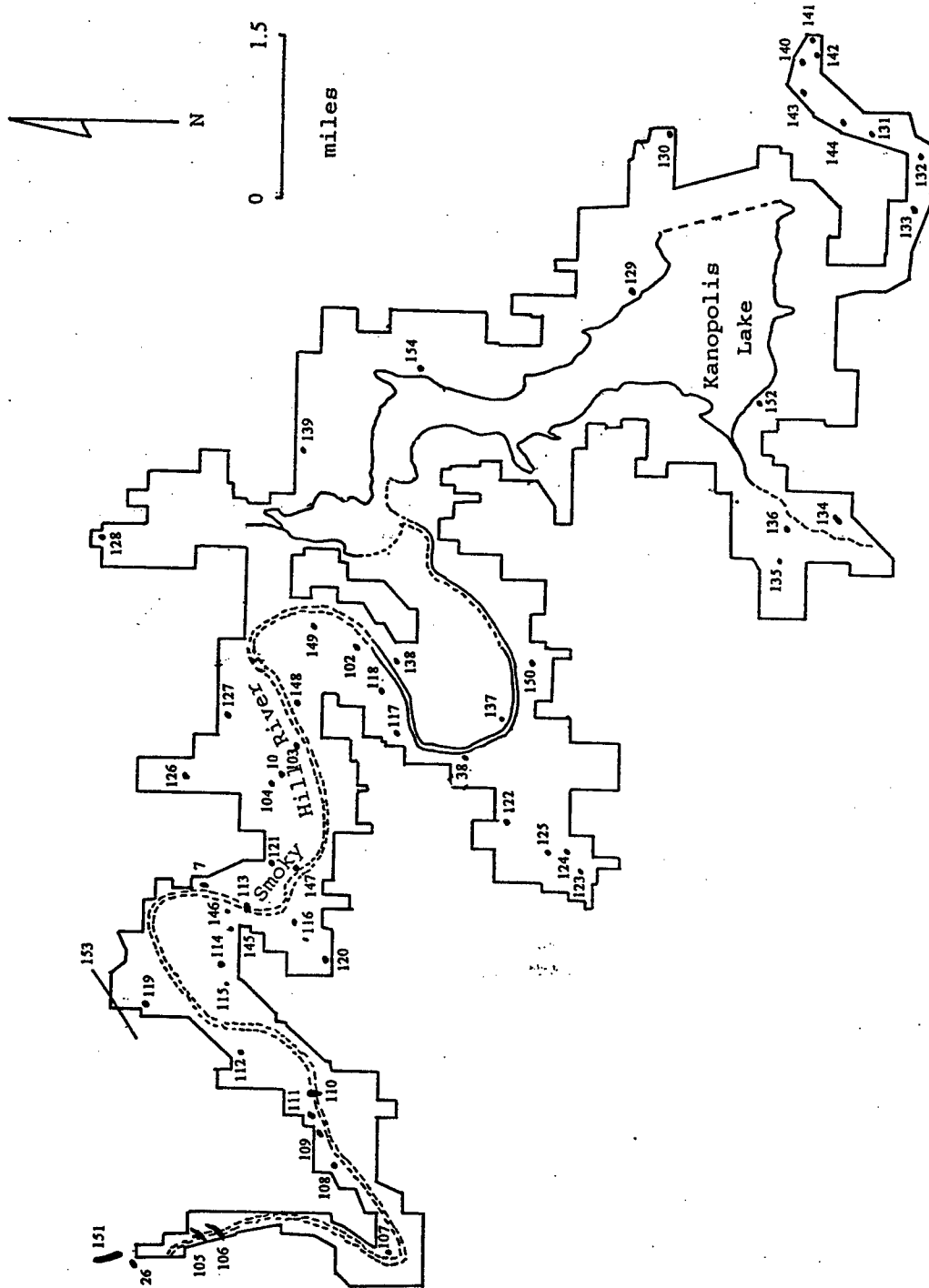


Figure 1.2. Map of the Kanopolis Lake Area Showing Locations of Previously Recorded Historic Sites and 14EW38, Recorded in 1997. All sites preceded by 14EW. Based on Burns and McDonnell 1996:Figure 6.

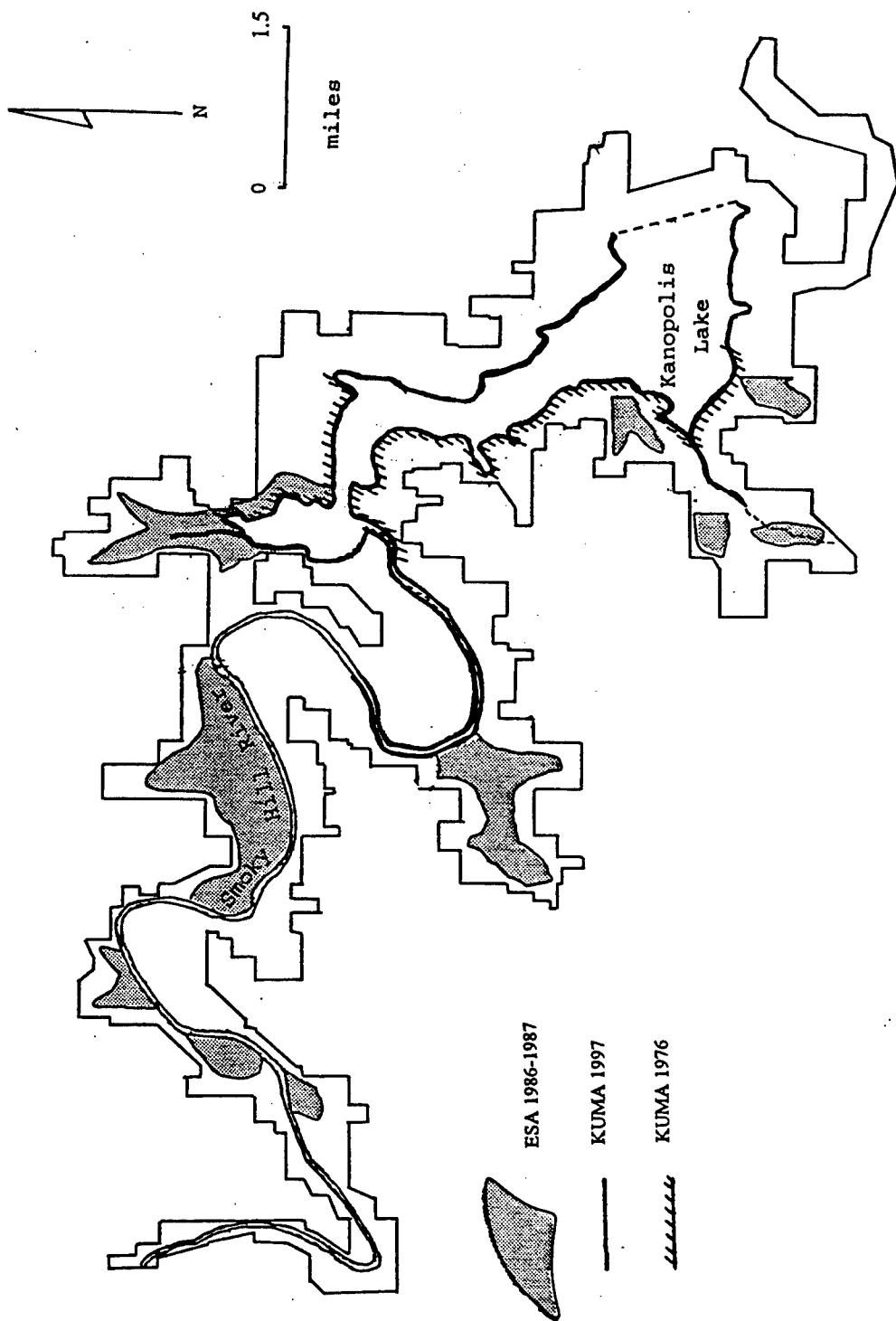


Figure 1.3. Map of the Kanopolis Lake Area Showing Previous Survey Areas and 1997 Survey Corridor.

in 21 recorded prehistoric sites, although only 18 were described in their 1947 report. All three of the sites evaluated for the NRHP eligibility in 1997 and described herein, were among those recorded at that time. Of the 18 sites discussed by Kivett (1947) 13 were described as occupation sites, two as burial sites, and three as petroglyph sites. They represent Woodland, Central Plains (Upper Republican/Smoky Hill), and Protohistoric (Great Bend) cultural complexes. Twelve of the occupation sites, as well as portions of the petroglyph sites, were expected to be inundated by the lake at maximum floodpool levels. A few paleontological resources were noted but not formally reported.

In 1947 a study of historical documents pertaining to the area was completed by Merrill Mattes for the National Park Service. This consisted primarily of archival research on historic sites and brief site inspections. The research resulted in the preliminary investigation of 19 historic sites (Mattes 1947).

Late that same year Dr. Carlyle S. Smith of the University of Kansas visited the Kanopolis area and initiated archaeological fieldwork at two sites (14EW12, 14EW13) with the aid of local collector William O. Leuty (Adair et al. 1995). Test excavations were continued in the summer of 1948 at 14EW12 and 14EW13, and a profile containing four stratified cultural horizons was exposed and described at 14EW6 (Smith 1949). The latter site, one of those evaluated in 1997, is described in more detail in chapter 5. Two others (14EW17, 14EW24) were investigated by Smith, although they are not located on federal property.

No formal archaeological studies of the Kanopolis Lake Project Area were conducted between 1949 and 1975, although Smith and local collectors gathered artifacts from various sites during this period. The Indian Hill site, 14EW1, was placed on the National Register of Historic Places in 1974 because of its significant prehistoric petroglyphs.

In 1976 the U.S. Army Corps of Engineers, Kansas City District, contracted with the University of Kansas Museum of Anthropology to complete a literature search, preliminary shoreline reconnaissance, and reinspection of previously reported archaeological sites at Kanopolis Lake (Leaf 1976, 1977). This study focused on prehistoric cultural resources. Archaeological reconnaissance for this project was confined to a 15% sample of the shoreline below 1488 feet amsl. No new sites were recorded, although five isolated find spots were reported. Previously recorded sites 14EW00, 14EW1, 14EW3-14, 14EW18-19, 14EW22-23, 14EW26, and 14EW35 were revisited, with new surface collections obtained from several. All revisited sites were found above the multipurpose pool elevation at that time; however, several had already sustained damage due to fluctuating water levels. An assessment of impact on each site for the then proposed Kanopolis Unit irrigation project was presented (Leaf 1977).

The next archaeological studies at Kanopolis Lake focused on the National Register Indian Hill petroglyph site (14EW1). Hayden (1979) and Conner and others (1980) completed background, preservation, and mitigative studies of this well-known site. As noted in these studies, a number of factors are causing the rapid erosion/destruction of the petroglyphs including undercutting of the site during periods of high floodpool levels. In order to thoroughly document this site before it was damaged further, a specialized stereophotogrammetric analysis of the petroglyphs was conducted by Dennett, Muessig, Ryan and Associates (1984).

Another petroglyph site in the Kanopolis Lake Project Area, 14EW14, has also been placed on the National Register of Historic Places under a statewide thematic nomination of Kansas Rock Art. Petroglyph site 14EW00 was included in the Kansas Petroglyph Survey, although not nominated to the National Register (O'Neill 1980). Most recently a geological stabilization study was completed for petroglyphs at the Faris Cave site (14EW7) (Grisafe 1992).

An updated historical and historic archaeological survey of the Kanopolis Lake project area was conducted in 1984 by Environmental Systems Analysis, Inc., for the U.S. Army Corps of Engineers, Kansas City District (Lees and Shockley 1986). Historical and archaeological research completed as part of this project expanded upon that originally undertaken by Mattes in 1947. A detailed literature review combined with archaeological survey resulted in the recording of 53 sites (including a number originally studied by Mattes). The majority of these (51) are historic resources. At least 28 were considered potentially significant. Eleven were tested in order to evaluate their eligibility to the National Register of Historic Places. As a result five sites (the Black Ranch - 14EW119, Faris Caves - 14EW7, Smoky Hill bridge - 14EW105, Fort Zarah/Santa Fe road - 14EW105/106, and Smoky Hill Trail/Denver Express Road - 14EW153) were recommended for nomination to the Register. Much of the Black Ranch, 14EW119, has since been damaged by fire and vandals (Roger Grosser, Kansas City District, U.S. Army Corps of Engineers, personal communication to Ritterbush, February 1993).

Archaeological investigation of prehistoric resources at Kanopolis Lake was reinstated in 1986. This project included archaeological survey, site testing, and geomorphic study by Environmental Systems Analysis, Inc., for the U.S. Army Corps of Engineers, Kansas City District (Corps of Engineers Publications 1996). Archaeological survey included approximately 3,115 acres in five survey areas between elevations 1483 and 1500 feet amsl and resulted in the recording of 18 previously undocumented sites, relocation of 15 of 18 previously recorded sites, and discovery of 12 isolated finds. Archaic, Woodland, Plains Village or Central Plains tradition (Smoky Hill), Protohistoric (Great Bend), unknown

prehistoric, and historic Euroamerican components were identified. Limited testing was completed with recommendations made for further NRHP testing of 17 sites, including two of the three sites evaluated here (14EW3 and 14EW19). Associated geomorphic study of the area attempted to devise a predictive model for locating buried archaeological sites.

Archaeological excavation of historic site 14EW26, Fort Ellsworth, was undertaken by the Kansas City District, U.S. Army Corps of Engineers under the direction of Robert Ziegler in 1995 and 1996. NRHP testing during the summer of 1995 located the remains of dugouts associated with early military occupation (Robert Ziegler, personal communication, August 1995). Excavations of the dugouts were done the following year in conjunction with the Kansas Archeological Training Program of the Kansas Anthropological Association (Reichart 1997). Although the site lies well above the present floodpool level of Kanopolis Lake, it has been adversely impacted by artifact collectors.

Report Organization

The following chapter presents a series of research questions that were provided for the Contractor (KUMA) by the Kansas City District, U.S. Army Corps of Engineers in the Scope of Work. It also describes the field and laboratory methods that were applied during the project. Chapter 3 presents an overview of the physical environment of the project area. Chapter 4 is a summary of the cultural historical background of central Kansas. In Chapter 5, we present the details of the investigation of sites 14EW3, 14EW6 (Thompson Creek), and 14EW19, describe the data recovered, and evaluate their NRHP eligibility with respect to the research questions. Chapter 6 describes the results of the shoreline survey. Chapter 7, a summary of the project results, contains the recommendations and the rationale for why no further investigations are required at the evaluated sites and in the survey corridor.

Chapter 2

Research Questions and Project Methods

William E. Banks and Brad Logan

This chapter presents the research questions established by the COE for the National Register of Historic Places evaluation of sites 14EW3, 14EW6, and 14EW19. It also describes the field techniques applied during the NRHP testing and survey investigation and the laboratory procedures involved in the analysis of recovered archaeological materials.

Research Questions

No research design was required of the Contractor. However, a series of research questions was provided for the National Register of Historic Places evaluation of the three sites tested during the project. Those questions, as written in the Scope of Work, are presented below. To the extent the data recovered from these sites during the project allow (and that is not very great), they are addressed in chapter 5:

1) Research Questions for 14EW3, 14EW6, and 14EW19. All of these sites are multicomponent with either Plains Woodland and/or Great Bend aspect and/or Plains Village occupations. The following questions shall be applied to the various cultural affiliations located at all of the sites in determining potential NRHP eligibility.

a) Are the sites stratified to a degree where the different cultural periods can be distinguished from one another? Are the artifacts mixed on the same soil layers so distinguishing one cultural period from another is not possible?

b) What are the site functions?

c) What evidence is there of permanent houses or a village? What kinds of structures are present and how do they relate to one another? How many structures were encountered? Can they be distinguished according to cultural affiliation?

d) Are features related to household activity?

e) What tool types are present in total site assemblages? Does the lithic assemblage support evidence of off-site procurement? What percentage of stone is non-local? Does non-local stone appear as debitage or finished products?

f) What type of ground stone artifacts are present? What functions were served by ground stone?

g) What types of modified bone are present?

h) Is trade evident? What materials are involved?

i) What types of fauna are being exploited? Is on-site processing and slaughtering of game animals occurring on the sites? What is the degree of reliance on fish and avifauna?

j) What evidence is there of cultigens? What wild plants are being exploited? Are wild plants from one or more ecological zones (i.e., uplands, river bottoms, etc.)?

k) Are there storage pits at the sites? If there are pits, how does the fill reflect activities carried out within the sites?

2) Sites with Plains Woodland Components. The following research questions shall be applied in determining NRHP eligibility.

a) Based on the ceramics and projectile points recovered, the majority of Woodland sites appear to be associated with Keith Focus (sic), what can be learned about the origins and development of Keith Focus (sic)?

b) Is there evidence of Plains Woodland complexes? A Hopewellian point was recovered from another Kanopolis Lake Woodland site, 14EW171. Is there any other evidence of Hopewellian traits or trade?

c) Very little substantive data has been recovered concerning the Woodland period. What can be learned about the settlement and subsistence patterns of the various Woodland complexes that inhabited this area?

3) Plains Village Components. The following research questions shall be applied in determining potential NRHP eligibility.

a) A Plains Village component at 14EW19 has been tentatively identified as a Smoky Hill Phase (sic) occupation based on the cordmarked pottery? (sic) Is this an accurate cultural placement of the site?

b) What can be learned about the Smoky Hill phase and its relationship to contemporary populations to the east such as the Steed-Kisker complex?

c) What can be learned about the origins and early development of the Smoky Hill phase?

4) Great Bend Aspect (sic) Components. The following research questions shall be applied in determining potential NRHP eligibility.

a) Can population movement to these sites be established from Great Bend occupations in other locations?

b) What is the nature and extent of trade between Great Bend sites and other indigenous populations and Europeans?

Global Positioning System (GPS) Technology

The project required that the three sites to be tested (14EW3, 14EW6, and 14EW19), any artifact concentrations located during the shoreline survey of Kanopolis Lake, and any known sites encountered in the survey transect, be precisely located with the use of a GPS receiver. This project utilized a Magellan GPS ProMARK X receiver to take positional readings. At each site datum and artifact concentration, the receiver was allowed to take a position reading for at least two minutes, but usually for five minutes (Fig 2.1). When positional readings were taken, the receiver was handheld, but when possible, it was placed on a transit tripod. The GPS receiver was also set to take readings at the rate of one per second and reference these to the North American Datum of 1927 (NAD 27). A file was created at each location for post-processing in the laboratory.

In order to obtain a differential accuracy of <3m for each GPS reading, the position data were post-processed using MSTAR version 1.0 Professional GPS Software, and the data from the GPS receiver in Salina, Kansas which is a geodetic control site. The GPS readings from the Salina geodetic control site are available on the Internet at <http://gisdasc.kgs.ukans.edu/> and can be downloaded in blocks of one week. Post-processing results were submitted as background data to the Kansas City District, U.S. Army Corps of Engineers and to the Kansas State Historic Preservation Department.

Site Testing

The same excavation methodology was used at all of the sites that required testing for this project. All test units were one square meter in size and at least one unit at each site was excavated to a depth of one meter. At some sites, particularly 14EW6, some units were terminated at shallower depths because the water table was reached before one meter of depth had been attained. Other units were stopped short of the arbitrary one meter depth when it was clear that the unit had reached a culturally sterile soil horizon.



Figure 2.1. Use of the Magellan GPS PromARK X Receiver at 14EW3.

Each test unit was excavated in ten centimeter levels by shovel skimming, and finer finishing work on the excavation levels was done with the use of a trowel. Shovel skimming generally removes dirt in half-centimeter slices so that artifacts can be detected and recovered in place. All excavated dirt was screened through $\frac{1}{4}$ inch mesh when feasible. This was not possible when the sediment was clay-rich and saturated making it impossible for the sediment to be pushed through the screen. When this was the case, the sediment was picked through with a trowel to recover any cultural materials.

Notes on sediment type, sediment color, and any natural and cultural inclusions were kept for each ten centimeter excavation level. All recovered cultural materials were placed in level bags by unit. Artifacts that were encountered on the surface of a site generally were not collected unless they were tools or culturally diagnostic. An exception is the grab sample of artifacts from the beach at 14EW3 (see chapter 5), where the variety of lithic raw materials represented by debitage was sampled in order to determine whether their sources might provide information about the regional mobility or trade relations of the site's occupants.

Shoreline Survey

The entire shoreline of Kanopolis Lake and the Smoky Hill River between 1463 and 1465 feet above mean sea level was surveyed. The survey was conducted in teams of two or three people to insure that the survey corridor was adequately covered (Fig. 2.2). Oftentimes, the shoreline or river bank topography was such that the two foot elevation interval was contained in an area that was only three to four feet wide. When this was the case, the area was walked with individuals following each other. This survey methodology was altered during the survey of the Smoky Hill River banks. The banks were composed of saturated clayey-silt and covered with driftwood making it difficult to survey on foot. The southern bank of the river was surveyed on foot until a point 300 meters upstream from 14EW6 was reached. At this point, pedestrian survey became unfeasible, and the remaining shoreline of the river was surveyed from a Jon boat (Fig. 2.2).

During the course of the survey, any cultural materials encountered were recorded and the center of the concentration was recorded with the GPS receiver. Any such finds were recorded as find spots. The GPS coordinates for each find spot are contained in Table 4.1. Cultural materials were not collected unless they were culturally diagnostic or formal tool types. A GPS reading was taken at 14EW12 since it was encountered in the pedestrian survey corridor.

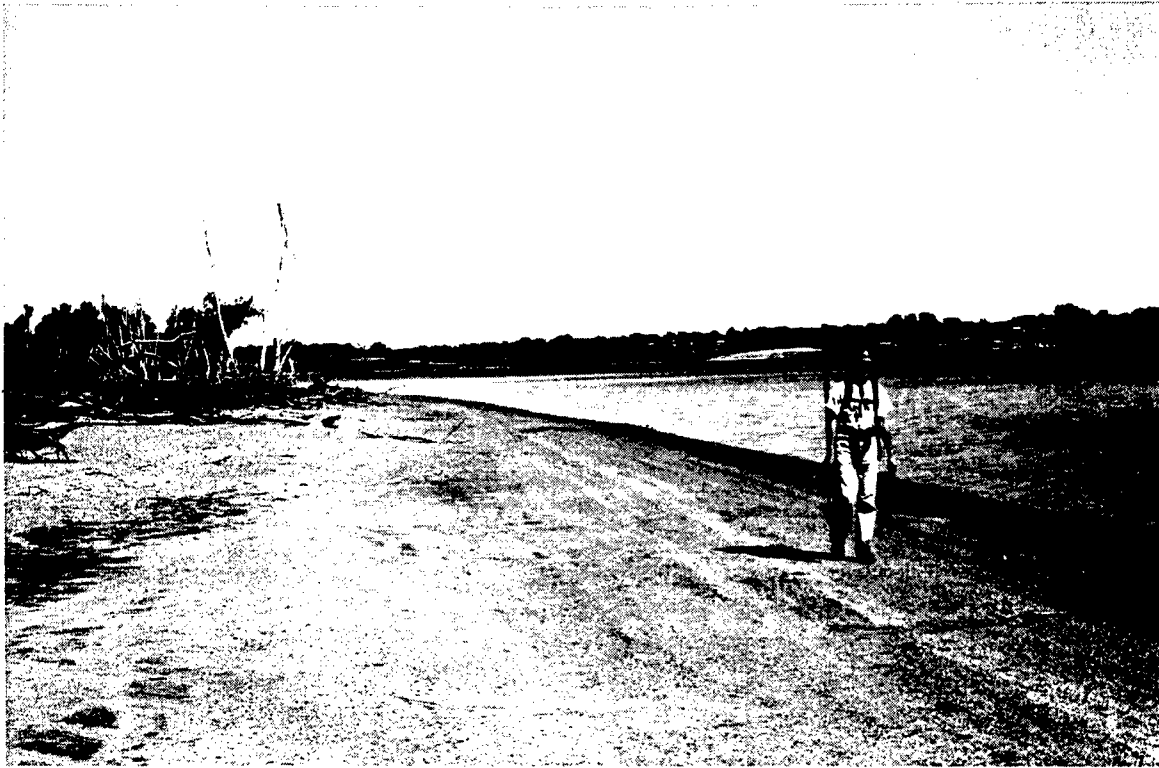


Figure 2.2. above) Pedestrian Shoreline Survey South of Boldt Bluff Access; below) Shoreline Survey by Jon Boat (Greg Jackson in photo). Note the saturated nature of the bank along the river.

Laboratory Analyses

All cultural materials recovered during the course of site testing and during the shoreline survey were transported to the Museum of Anthropology, University of Kansas to be catalogued and curated. Artifacts were washed and then sorted by site. Once sorted by site, artifacts were sorted by test unit and excavation unit. The subsequent groups of artifacts were sorted by type. The different classes of artifact are defined below.

Rimsherd - a ceramic fragment that retains a portion of the vessel rim.

Bodysherd - a ceramic fragment that once constituted the body of a vessel. These fragments do not retain a portion of the vessel rim.

Projectile Point - a bifacial tool whose working edges converge to form a tip. The base is often modified to facilitate hafting.

Biface - a tool type characterized by continuous or discontinuous flaking across both faces.

Endscraper - a flake or blade blank that is unifacially retouched on one end to produce a steep working edge that is usually straight or convex in outline.

Sidescraper - a flake or blade blank that is unifacially retouched on one of its lateral edges to produce a steep working edge that may be concave, straight, or convex in outline.

Scraper - a flake or blade blank that exhibits steep and unifacial retouch on both a distal and lateral edge.

Informal Scraper - a flake or blade blank which has steep, unifacial retouch but does not fall into any of the above definitions for scrapers.

Perforator - a flake or blade blank that has been retouched to produce a pronounced, sharp projection.

Retouched Flake - a flake that exhibits at least one cm of regular, purposeful, and continuous retouch along one or more edges.

Edge-modified Flake - a flake that exhibits use-related retouch or damage along one or more edges.

Flake - A piece of lithic material that was removed from a larger piece of lithic material through force of percussion and exhibits one or more of the following characteristics: 1) striking platform, 2) bulb of percussion, 3) an erralieu scar, 4) compression rings

on the ventral surface, and/or 5) dorsal scars or evidence of previous flake removals on the dorsal surface.

Chip - a thin piece of lithic debris generally smaller than one centimeter in length which resembles a flake but does not exhibit any of the characteristics used to define a flake.

Chunk - an irregularly shaped piece of lithic debris with at least one non-cortical surface and which does not exhibit any of the characteristics used to define a flake. It is over two centimeters in maximum length.

Shatter - an irregularly shaped piece of lithic debris with at least one non-cortical surface and which does not exhibit any of the characteristics used to define a flake. It is under two centimeters in maximum length.

Tested piece - a irregularly shaped piece of lithic material that retains a large portion of the original cortical surface but exhibits flake scars which have not been symmetrically placed.

Cobble - A piece of chert, sandstone, or limestone that is unmodified.

Hammerstone - a cobble of chert whose entire surface is cortical, sandstone, or limestone that has pecking or damage to an end or face that suggests it was used as a hammer.

Each distinct group or type of artifact was given a unique catalogue number. The number of pieces in the group was counted and weighed to the nearest tenth of a gram. The coded information for each artifact was entered into a database. The artifacts are curated in individual plastic bags with a label inside each bag. These bags are grouped by site and stored in acid-free curation boxes in the Museum of Anthropology, University of Kansas. All other documentation, including the Principal Investigator's daily field journal (hard copy and computer disk), unit/level forms, profiles, photograph log, film negatives and contact sheets of black-and-white exposures, and color slides, are curated in the archives of the KUMA Archaeology Collections.

Chapter 3

ENVIRONMENTAL CONTEXT

Lauren Ritterbush and Brad Logan

Introduction

This chapter presents a description of the physical environment of the Kanopolis Lake area relevant to the sites investigated during this project. While the Central Plains experienced dramatic changes during the time of human occupation, most of these occurred before 2000 BP, the base date of the ceramic-age periods to which the various components of nearly all Kanopolis Lake sites have been assigned (see chapter 4). Thus, the general physical environment described below, which is based on early Euroamerican accounts (e.g., fauna and flora) and recent records (e.g., physiography, geology, fluvial geomorphology, climate), provides a relevant model.

Physiography

The Kanopolis Lake area is located in Ellsworth County in the central portion of Kansas. This county is situated within the Great Plains physiographic province of the Interior Plains (Schoewe 1949:273-275) (Fig. 3.1). Topographically it lies within the Smoky Hills, a topographic unit that forms the eastern segment of the Dissected High Plains. This region is maturely dissected in bedrock of the Cretaceous Dakota Formation resulting in relatively low hills and wide valleys (Schoewe 1949:307-309). Topographic anomalies, such as buttes or "mounds," are found throughout the unit and form common landmarks.

Elevations in Ellsworth County vary by several hundred feet between valley bottoms and upland peaks. The lowest elevation in the area is about 1,410 ft amsl and the highest is about 1,910 ft on the divide between the Smoky Hill and Arkansas Rivers (Barker and Dodge 1989:1).

Hydrology

Kanopolis Lake inundates a reach of the Smoky Hill River and its tributaries. The latter include Alum Creek, a left (north) bank tributary on which 14EW3 is located, and Thompson Creek, a right (south) bank tributary along which 14EW6 and 14EW19 are located. The Smoky Hill River joins the Republican River near the modern town of Junction City in Geary County. Together these rivers form the Kansas River, the major drainage of eastern Kansas.

Generalized Physiographic Map of Kansas

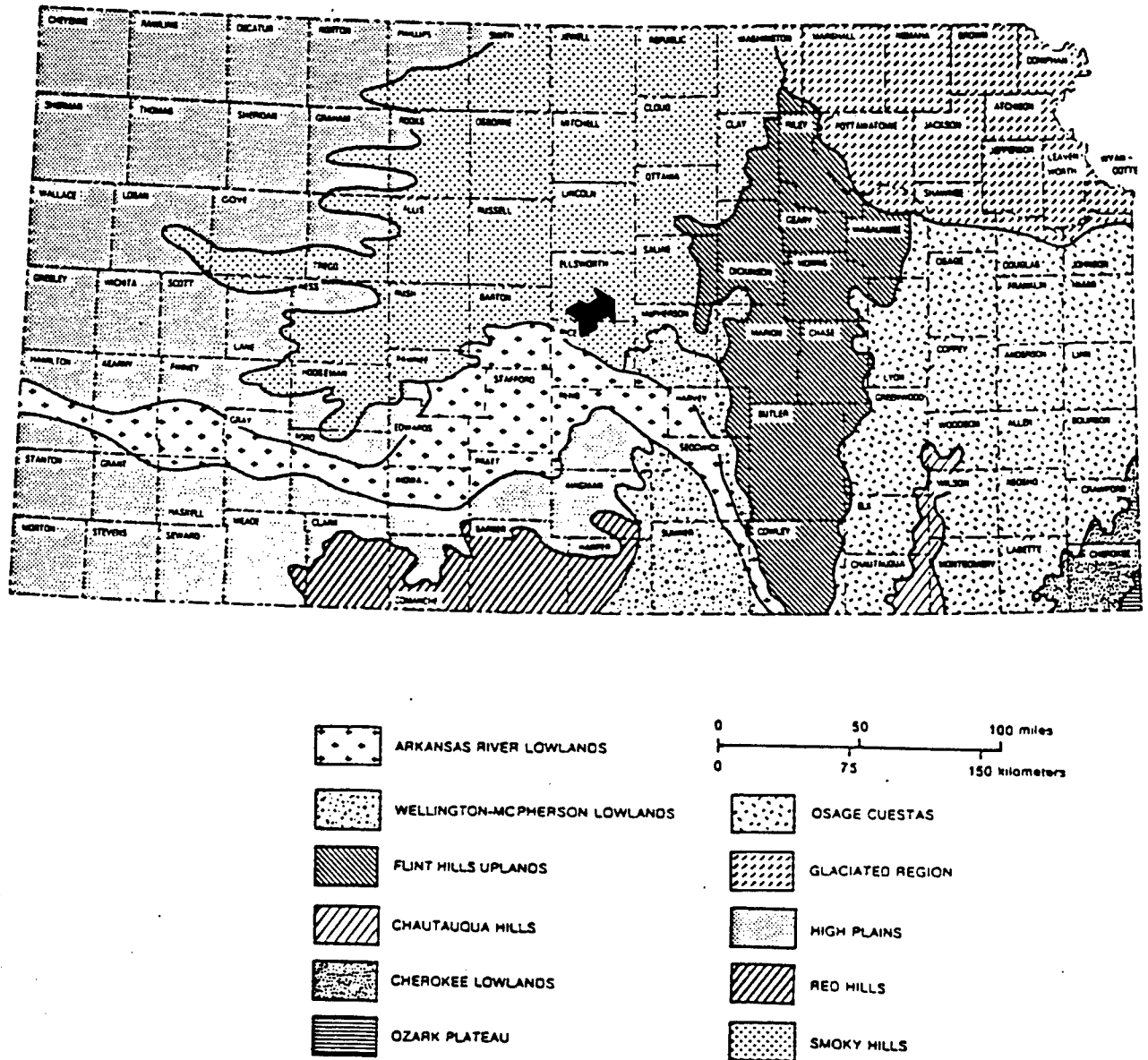


Figure 3.1. Generalized Physiographic Map of Kansas Showing Location of Kanopolis Lake (modified from Brown and Simmons 1987).

The headwaters of the Kansas River basin are in eastern Colorado and those of the Smoky Hill River in particular are in Kit Carson and Cheyenne Counties in that state. The Smoky Hill River drains an area of about 20,480mi². Much of this is in the High Plains of northwestern Kansas. The valley of the Smoky Hill River is narrow, "seldom more than 1 mile wide west of Ellsworth" (Schoewe 1951:286). Below Ellsworth it widens, reaching dimensions of four miles at Lindsborg and 8-9 miles at Salina. From the latter city it narrows again to 1-2 miles below Chapman. As Schoewe (1951:287) notes, the variation in valley width is attributable to the relative erosive nature of the bedrock through which the stream runs. Most of the valley has cut through Cretaceous rock, though below Salina it has channeled through Permian stone and at its westernmost extreme in Kansas it runs through Tertiary deposits. At its current multipurpose pool elevation (1463 ft amsl), Kanopolis Lake has a surface area of 3,406 acres and a shoreline 41 miles in length.

Alluvial Geomorphology

Geomorphic investigations were undertaken in the Kanopolis Lake area as part of an archaeological survey in 1986-1987 (Mandel 1996). The emphasis of those studies was to gather data sufficient for developing a general landform evolutionary model. Such a model could be useful for predicting the soil/sedimentary context of cultural resources in the Kanopolis Lake area, particularly those associated with Holocene terraces, alluvial fans and colluvial footslopes. A total of 23 backhoe trenches was excavated to a maximum depth of 3.5m, and 14 cores were extracted along cross-valley and longitudinal transects (Mandel 1996:50). This research led to a general geoarchaeological model for potential site locations along the lower reaches of the Smoky Hill River.

Three alluvial terraces were identified in the Kanopolis Lake area, numbered T0, T1, and T2 from the lowest to the highest (Mandel 1996:72-73). Fill underlying the highest terrace was suggested to be Wisconsinan to very early Holocene in age. The terraces have been deflated by erosion and buried by colluvium. Alluvium below the T1 terrace in the Smoky Hill River valley was being deposited by at least the Middle Holocene. Periods of stability, represented by buried soils that provided a series of radiocarbon dates, interrupted deposition of the T1 fill ca. 4500 and 2600 BP. Historic sediment mantles parts of the T1 terrace in the main valley. That aggradation of T1 fill in the small valleys occurred periodically and primarily during the late Holocene is documented by a series of paleosols that have been radiocarbon dated at ca. 4200, 3700, 2600, 1500, and 1100 BP. The modern floodplain (T0) postdates 1000 BP and is still accumulating. Evidence of this process was seen in test units at 14EW6 (see chapter 5) and in the recent deposits of alluvium within the lake noted during the survey (chapter 6).

Sedimentation at the mouths of small tributaries during the Middle Holocene resulted in large, gently sloping fans (Mandel 1996:73). Periods of stability are reflected by paleosols that have been dated ca. 5750, 5300, and 5100 BP. Fan stabilization is believed to have occurred ca. 2000 BP. Smaller, steeper fans developed at the mouths of first-order streams during late Holocene time and are still aggrading. Surfaces buried in the fill below these fans have been dated ca. 3200, 900, and 700 BP.

Mandel's (1996:73) model, based on these data, predicts Late and Middle Archaic sites below large alluvial fans and below T1 terraces along the main valley; Late Archaic and Plains Woodland sites below the smaller alluvial fans; and high potential for Late Archaic sites below T1 terraces in the smaller valleys.

Lithic Resources

Understanding the geology of central Kansas is important because of its relevance to the lithic resources available in the region for stone tools. Raw materials for chipped stone tools at Kanopolis Lake sites were derived from several local and non-local sources, including gravel outwash deposits of chalcedonies, quartzites, and basalts (Janice MacLean, KUMA, personal communication to Logan, 1997); jasper from the Niobrara formation of northwestern Kansas, and Permian cherts from the Flint Hills to the east of the project area. Dakota sandstone in the Cretaceous bedrock provided a ready source of hearthstone and a naturally abrasive material.

As its name implies, the Flint Hills is one of the richest sources of chipped stone raw material in the Central Plains. Although the chert resources of this region are highly varied and have yet to be adequately described, research by Johnson (1980) in the Tuttle Creek Lake Project Area northeast of Kanopolis Lake has revealed some valuable background information to the availability of cherts in the northern Flint Hills. Johnson recognized at least 16 chert-bearing members in two groups (Council Grove and Chase) of the Gearyan Stage stratigraphic unit of the Lower Permian Series in the Tuttle Creek area. Some of these members contain as many as 12 distinctive beds of cherts, attesting to the richness of this resource. However, the distribution of chert sources and, thus, their predictability, has yet to be determined. As Johnson (1980: 8-10) pointed out, although cherts have been identified as one of the characteristic components of particular limestone members in the Tuttle Creek area, their presence throughout that member may not be ubiquitous. Survey and mapping of chert resources are tasks that still need to be undertaken by geologists and archaeologists concerned with this aspect of the prehistory of the northern Flint Hills. The quality of these cherts for chipped stone tool manufacture may vary.

It is known that cherts occur in two contexts in the northern Flint Hills, as in situ components of bedrock members and as transported or eroded pieces in alluvial deposits of Quaternary age. In situ cherts may be found as continuous bands or beds, discontinuous layers or zones of individual nodules, isolated nodular pieces, or in a number of less frequent forms. They all occur in the limestone members assigned to the Gearyan stage of the Permian system (Wolfcampian, lower Permian series). Three groups make up the Gearyan stage; from oldest (lower) to youngest (highest) are the Admire, Council Grove and Chase groups. Members of the Admire group are chert-free. As Johnson (1980:20) indicates in his review of the available literature pertaining to the nature of cherts in the Council Grove group, the presence of this material in certain of its members **in the northern part** of their outcrop range is unclear. There are cherts within the Foraker, Cottonwood and Funston members of this group. Cottonwood cherts, the most abundant of these, occur as common to scattered light gray to white nodules, which may contain fusilinid fossils. Funston cherts occur as nodules with blue-gray core. Where the Funston member contains these cherts it may also bear occasional nodules of chalcedony in the lower part of the limestone.

The Chase group contains the most reliable and extensive chert-bearing geologic units of the Permian system in Kansas (Johnson 1980:20). This group is composed of seven formations, four of which contain chert-bearing limestone members. The Wreford formation contains three members consisting of two limestone strata above and below the Havensville shale. Havensville is reported to contain chalcedony nodules and, in its southern range, some chert. The lower limestone member, Threemile, contains layers or scattered nodules of bluish-gray chert. The upper limestone member, Schroyer, contains several bands of gray chert. The Barnestone formation contains the richest source of cherts in the Flint Hills, the Florence limestone. At least four varieties of Florence cherts, A-D, have been identified (McLean 1997). Florence A, also called Kay Count or Maple City chert, is restricted to the southern Flint Hills; Florence B and C are distributed throughout the Flint Hills; Florence D appears to be restricted to the northern part of that region. The color of Florence cherts is variable, though most are some hue of gray; they are often banded and include numerous fossils, especially fusilinids. The distribution of Florence cherts in the southern part of the Flint Hills and their utilization by prehistoric groups in that region have been studied by Haury (1979, 1981, 1984) and in the northern part by Blasing (n.d.). Both limestone members of the Winfield formation are chert-bearing. Stovall, the lower member, is the most chert-rich in the Tuttle Creek area (Walters and Bayne 1959:68). Its chert is gray and occurs abundantly within the relatively thin bed of this limestone. Cresswell limestone, while known to contain chert, is apparently absent in the northern part of Kansas. Finally, the Herrington limestone, which caps the

Nolans formation (itself the uppermost unit of the Chase group), contains cherts. However, these cherts are not considered a significant resource in the Tuttle Creek area (Johnson 1980:21).

Transported cherts occur in the Tuttle Creek area in four kinds of deposits: residual, mass-waste, alluvial, and glacial. The age of these deposits and, to a certain extent, their degree of burial and relative availability, is generally given with reference to the Kansan glaciation (of the classic four-stage glacial sequence). Pre-Kansan and Kansan glacial deposits are relatively inaccessible. Post-Kansan deposits, both alluvial and colluvial, are more accessible if not always continuous. Johnson (1980:26) believes neither alluvial nor glacial drift deposits of transported cherts served as significant sources of chert for prehistoric populations.

The most reliable sources of chert raw materials in the Tuttle Creek area, and by inference in the northern Flint Hills, were those contained in bedrock. Topographically, these sources are found most readily in the valley slopes and bluffs of the Flint Hills. The upper reaches of small stream valleys, where they cut into valley slopes and bluffs, are the most significant areas for locating both chert-bearing limestones and transported chert gravels. Alluvial floodplains and lower terraces along major streams are considered the poorest sources of cherts (Johnson 1980:26).

Another resource for chipped stone tools occurs about 80mi northwest of the study area. This is the silicified chalk of the Niobrara formation. Known by a variety of names (Smoky Hill silicified chalk, Smoky Hill jasper, Graham jasper, Republican River chert, Niobrarite), this material has been described in detail elsewhere and will not be similarly treated here (Holen 1983:44-47; Wedel 1986:28-30). The relatively thin tabular slabs of this silicified chalk range in color from white through yellowish brown (Munsell color- 10YR5/4-8) and brown to dark brown (10YR3-4/3). Other colors include red, green, black, white and, rarely, purple (Holen 1991:401). The source of this raw material is within the Niobrara formation of northwestern Kansas and a small portion of southwestern Nebraska, where it is associated stratigraphically with the Smoky Hill chalk member (Holen 1991:401). According to Wright (1985), the Kansas counties of Decatur, Norton, Phillips, Smith, Sheridan, Graham, Rooks, Gove, Trego, Ellis, Lane and Ness are included within this area.

Sandstone and limestone for groundstone tools were also available to prehistoric inhabitants of central Kansas. As noted earlier, the Cretaceous Dakota Formation underlies the Smoky Hills physiographic province. Although this formation consists primarily of clay, lenses of quartzitic sandstone are also included. This sandstone is generally light gray, but, due to inclusion of iron oxide, weathers to dark shades of yellow, orange, brown, and/or red

(Walters and Bayne 1959:73; Franks et al. 1959:227). This sandstone is exposed at the surface as lenses less than a foot thick up to massive beds tens of feet thick (Franks et al. 1959:227). It often forms caprock of buttes or "mounds" where the amount of iron oxide cement exceeds the number of quartz grains. In most instances the Dakota sandstone is composed of medium fine-grained, well-rounded and sorted quartz grains (Franks et al. 1959:227). These characteristics, combined with the ready availability of the sandstone, made it a suitable raw material for prehistoric use as grinding stones and abraders. Limestone was also used prehistorically for grinding stones and other shaping and shaped stone tools.

Finally, gravels and clay deposits are also present in the project area. Gravel deposits would have been locally exposed along streams as alluvial or terrace deposits during the Holocene. Streams that drain the eastern flanks of the Rocky Mountains and the High Plains frequently carry gravels of materials utilized by Native Americans, including chalcedony, quartzite, and basalt, examples of which are included in the lithic artifacts recovered during the project. Clay is abundant in the Dakota Formation and is considered a modern source of ceramic clays. These clays or clays exposed in terrace and alluvial deposits may have been used prehistorically in the manufacture of pottery vessels and other ceramic items.

Climate

The climate of Ellsworth County throughout the period of record-keeping fits the fickle stereotype of Kansas weather. It is characterized as continental with large diurnal and annual variations in temperature, as well as precipitation. Summers last about six months and have hot temperatures, averaging 78.4°F. The average daily maximum temperature during the summer is 91.3°F, and the record high is 117°F recorded at Ellsworth on August 12, 1938. At the other extreme is winter with cold temperatures between December and February. The lowest recorded temperature at Ellsworth was -30°F on January 18, 1913, although the average winter temperature is near freezing at 32.4°F. The average daily minimum is 20.1°F (Bark 1989). Similar variations in temperature may have also existed during the ceramic periods of central Kansas. Shelter, therefore, was essential for protection from seasonal extremes. Probably more important for Late Prehistoric and Protohistoric hunter-gatherer-gardeners, however, was variation in precipitation.

Precipitation in central Kansas, like temperature, is variable throughout and between years. Modern average annual precipitation is 28.09 inches, of which 20 inches falls as rain during summer thunderstorms. This moisture is brought to the region by a current of Gulf Stream air. As noted by Bark (1989:2), however, Ellsworth

County lies along the western edge of this current and shifts in its course result in wide variation in precipitation. In fact, two years in ten will have less than 15.35 inches of rainfall. Wedel (1979) suggested that at least eight inches of rainfall during the summer growing months (June-August) were essential for early corn agriculture. Historic climatic data suggest that some years had less than this, indicating the marginality of successful dry farming in the Central Plains (Wedel 1979:17-18). Occasional heavy rainfall, like minimal precipitation, can also adversely affect crop growth. These facts are important in understanding prehistoric occupation of the region by people who were at least partially reliant on horticulture.

In addition to the important variables of temperature and precipitation, other factors no doubt played roles in prehistoric adaptation to the region. During the period of record used by Bark (1989), the growing season (based on days with temperatures higher than 32°) in Ellsworth County during a ten-year period ranged from 158 to 199 days. This is generally sufficient for modern corn agriculture and was probably also sufficient in prehistoric times. This is suggested by Will's determination that Native Americans had developed corn varieties needing as little as 60 days to mature (Will 1924, cited in Wedel 1983:102). Sunshine, wind, hail, and snow may also have affected adaptation. The sun shines on the average of 76% of the time during the summer, thus, aiding agriculture. Wind, on the other hand, can be damaging to crops, although the highest wind speeds are in April before crops would be affected. Occasional summer tornados and severe thunderstorms, especially if including hail, can be locally damaging. Although snow does not directly affect summer crops, it can affect spring ground moisture necessary for crop germination. The average seasonal snowfall is 23.5 inches and an average of 20 days of the year will have at least one inch of snow cover (Bark 1989).

While modern data provide a model that is generally applicable to the past, some changes in climate may have affected ceramic-age populations of central Kansas. Paleoclimatic studies suggest fluctuation in temperature and precipitation patterns throughout prehistory. Initial occupation of the Central Plains by Late Prehistoric populations coincided with the Neo-Atlantic climatic episode. At this time, from about 1225-800 BP, moist tropical air extended into the Central Plains providing moist summer conditions suitable for agriculture. Temperatures continued warm, providing a mild climate. Around 800 years ago dry westerly currents strengthened and resulted in decreased precipitation and temperatures. These general conditions, associated with the Pacific climatic episode, continued for about four centuries before the Neo-Boreal episode of cooler and moister conditions began about AD 1550. Today's climate results from another drying and warming trend caused by strengthening westerlies (Baerris and Bryson 1965:213-217; Bryson, Baerris and Wendland 1970; Wedel 1986:42-48). The drying associated with the Pacific climatic episode has been

used to explain the disappearance of the Upper Republican culture from southern Nebraska in the thirteenth century (Wedel 1986:132-133; Wedel 1941). A similar explanation may also be relevant to changes in the adaptation of the Smoky Hill culture during the 15th century A.D.

Vegetation

In terms of vegetation, Kanopolis Lake is located along the boundary between the tallgrass and mixed-grass prairie communities (Fig. 3.2). The former dominates the eastern one-third of Kansas. The principal plants of this community are big bluestem (Andropogon gerardi), little bluestem (Andropogon scoparius), switchgrass (Panicum virgatum), and Indian grass (Sorghastrum nutans). The western boundary of the tallgrass prairie in Kansas is just at Kanopolis Lake and west of it lies the mixed prairies of central Kansas. The primary plants in that region are big bluestem, little bluestem, sideoats grama (Bouteloua curtipendula) and blue grama (Bouteloua gracilis). This boundary is neither abrupt nor fixed and Kuchler (1974) assigns a transition zone to this region. He correlates this zone with the substrate of the Dakota Formation that marks the Smoky Hills. Here the growth forms and taxa of both prairie types are well represented. However, the dominant species appear to be most comparable to those of the tallgrass prairie. This may be due to the especially sensitive nature of the mixed grass prairie to climatic conditions, particularly fluctuations in precipitation. Its boundaries, therefore, have been dynamic, "oscillating eastward and westward with the alternating intense droughts and wet periods" (Kuchler 1974:588).

Although prairie grasses dominated central Kansas during the presettlement Holocene, forbs and trees also occurred in the region. Among the former are various flowering herbs, such as mallows, goldenrods, blazing stars, and sunflowers. These add diversity to the prairies and may have been utilized by prehistoric peoples for fiber, dyes, and foods. The prairie turnip (Psoralea esculenta), a common herb in the tallgrass and mixed-grass prairies is an example of an edible plant known to have been harvested in historic times by Indians of the Plains (Reid 1977; Wedel 1978; Kindscher 1987:183-189).

Trees are also present in the tallgrass and mixed-grass prairies. Their presence generally correlates with available water from permanent or intermittent streams. The floodplain forest-savanna community of the eastern portion of Kansas was characterized by medium tall to tall broadleaf deciduous forests with dense undergrowth. Within the floodplain forest community, dominant plants were cottonwood (Populus deltoides), hackberry (Celtis occidentalis), peachleaved willow (Salix amygdaloides), black willow (Salix nigra) and American elm (Ulmus americana). Black walnut (Juglans nigra), green ash (Fraxinus pennsylvanica),

and sycamore (Platanus occidentalis) may also have occurred. Buckbrush (Symphoricarpos orbiculatus), Missouri gooseberry (Ribes missouriense), and other herbs dominated the understory. Trees may also have been found locally along hill slopes. These woods today contain bur oak (Quercus macrocarpa), bitternut hickory (Carya cordiformis) and shagbark hickory (C. ovata). Further west in the drier mixed-grass prairies trees were less abundant. Cottonwoods dominate the modern floodplain forests and herbs are less dense in the understory. Cedars (Juniperus virginiana) also appear in scattered locales.

The native forest and grass cover of the prairies occasionally gave way to freshwater marshes in poorly-drained areas. The major plant of these communities was prairie cordgrass (Spartina pectinata), associated with various other plants such as chenopods, purslane, docks, and smartweeds. The varied trees, herbs, and grasses were potential sources of food (nuts, seeds, berries, tubers, and greens), fibers, firewood, building materials, and other resources.

Fauna

Central Kansas is and has been home to a wide variety of animals. Many of these played an important role in the subsistence economy of its prehistoric hunter-gatherer and hunter-gatherer-gardener residents. These included fauna associated with prairie, floodplain forest, and aquatic habitats. Animals of all major classes, including mammals, birds, reptiles, amphibians, fish, and mussels, were exploited to varying degrees throughout prehistory. Fauna utilized by prehistoric peoples of north-central Kansas have been identified from several archaeological assemblages from the region. These include assemblages from Smoky Hill phase habitation sites, including 14GE600 (Witt), 14PO4 (Budenbender), 14RY401, and to a lesser extent 14RY8 (Fancy Creek) and 14CY102 (Moll [Mall] Creek) located northeast of the Kanopolis Lake area. The tabulated inventories from these sites provide insight into the variety of animals present and/or utilized by the residents of the region during the Plains Village period (Table 3.1).

As illustrated in Table 3.1, the mammalian fauna represented at these five sites range from small rodents to large herbivores. Many of these species still inhabit north-central Kansas or were known in the region historically. The large herbivores, namely bison, elk (wapiti), white-tailed deer, and pronghorn antelope, provided large biomass for subsistence, as well as bones for tools. Smaller mammals, especially mice, rats, and voles, may or may not have been used as food resources and may have become incorporated into the faunal assemblages naturally before, during, or after occupation (Whyte 1991). Faunal remains identified from the Middle Archaic components of the Coffey site (14PO1), along the Big Blue River, include several of the same species identified at these

Table 3.1. Identified Taxa from Smoky Hill Phase Sites in North-Central Kansas.

<u>Taxonomic Name</u>	<u>Common Name</u>	<u>14GE600*</u>	<u>14PO4*</u>	<u>14RY401*</u>	<u>Other</u>
Mammals:					
<u>Sylvilagus</u> cf. <u>floridanus</u>	Eastern cottontail	+	+	+	1,2
<u>Sciurus</u> <u>carolinensis</u> or <u>niger</u>	Gray or Fox squirrel	+	+	-	1
<u>Geomys bursarius</u>	Plains pocket gopher	+	+	-	
<u>Castor canadensis</u>	Beaver	+	-	+	
<u>Perognathus</u> <u>hispidus</u>	Hisped pocket mouse	+	-	-	
<u>Perognathus</u> sp.	Pocket mouse	+	-	-	
<u>Peromyscus</u> <u>maniculatus</u>	Deer mouse	-	-	-	1
<u>Cricetidae</u>	Native rats & mice	+	-	-	
<u>Oryzomys</u> <u>palustris</u>	Marsh rice rat	+	-	-	
<u>Oryzomys</u> sp.	Rice rat	+	-	-	
<u>Onychomys</u> cf. <u>leucogaster</u>	Northern grass-hopper mouse	+	-	-	
<u>Sigmodon</u> cf. <u>hispidus</u>	Hisped cotton rat	+	+	+	
<u>Neotoma</u> cf. <u>floridana</u>	Eastern wood rat	+	+	-	
<u>Microtus</u> <u>ochrogaster</u>	Prairie vole	+	-	-	
<u>Microtus</u> sp.	Meadow vole	+	-	-	
<u>Canis latrans</u> or <u>familiaris</u>	Coyote or Dog	+	+	+	2
<u>Procyon lotor</u>	Raccoon	-	+	+	
<u>Taxidea taxus</u>	Badger	-	-	+	
<u>Cervus</u> <u>canadensis</u>	Elk (Wapiti)	+	-	+	
<u>Odocoileus</u> <u>virginianus</u>	White-tailed deer	+	-	-	1
<u>Odocoileus</u> sp.	Deer	+	+	+	2
<u>Antilocapra</u> <u>americana</u>	Pronghorn	+	+	-	(2)
<u>Bison bison</u>	Bison	+	-	+	2

Table 3.1 (continued)

<u>Taxonomic Name</u>	<u>Common Name</u>	<u>14GE600*</u>	<u>14PO4*</u>	<u>14RY401*</u>	<u>OTHER</u>
Birds:					
<u>Podilymbus</u>	Pied-billed				
<u>podiceps</u>	grebe	-	+	-	
Anatidae	Swans, Geese,				
	Ducks	-	-	+	
<u>Aix sponsa</u>	Wood duck	-	+	-	
<u>Anas carolinensis</u>	Green-winged teal	-	+	-	
<u>Anas</u>					
<u>platyrhynchos</u>	Mallard	-	+	-	
<u>Branta</u>					
<u>canadensis</u>	Canada goose	+	-	-	
<u>Crus canadensis</u>	Sandhill crane	-	+	-	
<u>Haliaeetus</u>					
<u>leucocephalus</u>	Bald eagle	+	-	-	
<u>Asio otus</u>	Long-eared owl	+	-	-	
<u>Tympanuchus</u>	Greater prairie				
<u>cupido</u>	chicken	+	+	-	
<u>Colinus</u>					
<u>virginianus</u>	Bobwhite	+	-	-	
<u>Meleagris</u>					
<u>gallopavo</u>	Turkey	+	-	+	1,2
Picidae	Woodpeckers	+	-	-	
<u>Melanerpes</u>	Red-headed				
<u>erythrocephalus</u>	woodpecker	+	-	-	
<u>Cyanocitta</u>					
<u>cristata</u>	Blue jay	+	-	-	
Passeriformes		-	-	-	1
Reptiles:					
<u>Chelydra</u>	Northern snapping				
<u>serpentina</u>	turtle	+	+	+	2
<u>Kinosternon</u>	Plains yellow mud				
<u>flavescens</u>	turtle	+	-	-	
<u>Terrepene</u>	Eastern ornate				
<u>ornata</u>	turtle	+	+	-	1
<u>Chrysemys picta</u>	Western painted				
	turtle	-	+	-	
<u>Trionyx muticus</u>	Midland smooth				
	softshell turtle	-	-	+	
<u>Trionyx</u>	Western spiny				
<u>spiniferus</u>	softshell turtle	+	-	+	

Table 3.1 (continued)

<u>Taxonomic Name</u>	<u>Common Name</u>	<u>14GE600*</u>	<u>14PO4*</u>	<u>14RY401*</u>	<u>OTHER</u>
Amphibians:					
<u>Bufo cognatus</u>	Great Plains toad	+	-	-	
<u>Bufo woodhousei</u>	Rocky Mountain toad	+	-	-	
<u>Bufo</u> sp.	Toad	+	+	+	
<u>Rana catesbeiana</u>	Bullfrog	+	-	-	
<u>Rana</u> sp.	Frog	+	+	-	
<u>Pseidacris triseriata</u>	Western Chorus Frog	-	-	-	1
Fish:					
<u>Lepisosteus platostomus</u>	Short-nosed gar	+	-	+	
<u>Lepisosteus</u> sp.	Gar	+	-	+	
<u>Notropis cornutus</u>	Northern common shiner	+	-		-
<u>Ictalurus melas</u>	Black bullhead	+	+	+	
<u>Ictalurus punctatus</u>	Channel catfish	+	-	+	
<u>Ictalurus furcatus</u>	Blue catfish	+	-	-	
<u>Ictalurus</u> sp.	Catfish	+	-	+	
<u>Pylodictus olivaris</u>	Flathead	+	-	+	
<u>Pomoxis annularis</u>	White crappie	+	-	-	
<u>Aplodinotus grunniens</u>	Freshwater drum	+	-	-	
Pisces					1

1 Fauna identified from test excavations at 14RY8 (Fancy Creek site) (Schmits et al. 1987:123).

2 Incomplete identification of faunal remains from 14CY102 (Moll [Mall] Creek site) (Steinacher 1975:104-106).

* Brown (1982:19-39)

Smoky Hill phase sites, as well as striped skunk (Mephitis mephitis), ground squirrel (Spermophilus franklinii), and eastern mole (Scalopus aquaticus) (Schmits 1978:135). At least one species, Canis familiaris (dog), may have been present as a domesticated animal.

Migratory and permanent avian residents were also utilized by prehistoric populations in central Kansas. Remains of water birds, such as grebes, ducks, teals, mallard, and geese, indicate use of aquatic resources at Smoky Hill phase sites (Table 3.1). Ducks, teals, and geese are also represented at the Coffey site (14P01) (Schmits 1978:137-139). Prairie species are more commonly found at the Smoky Hill phase sites. Noteworthy among these are game birds including the bobwhite, turkey, and greater prairie chicken (Brown 1982:27-28). Each of these continues to inhabit north-central Kansas and is a useful food source. Raptors (e.g., bald eagle, long-eared owl) are not known ethnographically as important food sources. However, the bones and feathers of these and other birds may have been used for utilitarian and/or ceremonial purposes. The latter have been suggested for the remains of bald eagle, owl, blue jay, and woodpeckers from the Witt lodge (14GE600) (O'Brien 1986).

Reptiles and amphibians appear to be less commonly used by prehistoric groups in the region. Nonetheless, remains of six species of turtles, two species of frogs, and two species of toads are represented in the Smoky Hill phase assemblages tabulated above. As in the case of certain small mammals, such as mice, rats, and voles, the remains of amphibians, such as toads and frogs, may be attributed to fortuitous natural inclusion in the site assemblage (Whyte 1991). Another interpretation of their presence may relate to selection of certain body parts (e.g., turtle carapaces) for utilitarian or ceremonial use.

Among the most abundant aquatic resources available to the past occupants of central Kansas were fish and mussels. These could be collected from the many small streams that drain the region and from the Smoky Hill River and nearby streams. Eight species of fish have been identified at Smoky Hill phase sites. The widest variety has been identified from the Witt lodge (14GE600), which is located along the Smoky Hill River near its junction with the Republican River. The other sites are located along tributary streams of the Big Blue and Kansas rivers where the quantity and diversity of fish may have been limited. Earlier prehistoric use of fish is evident at the Coffey site (14P01) on the Big Blue River (Schmits 1978:141-144).

Various freshwater mussels also inhabit the bottoms of aquatic environments in the region and are represented in archaeological assemblages. Historic changes in river ecology may have caused local extinction of some species (Murray and Leonard 1962). For example, the hickory-nut mussel (*Obovaria olivaria*) is assumed to have been extirpated from eastern Kansas since the early 1900s (Murray and Leonard 1962:161-162). The identification of mussel shells in archaeological collections may indicate a wider diversity in central Kansas in prehistoric times. Table 3.2 lists those species of mussels identified in the assemblage recovered the Moll (Mall) Creek site (14CY102) (Steinacher 1975:102-103). This site

represents a Smoky Hill phase occupation along Mall Creek near its confluence with the Republican River, about 60mi northeast of the Kanopolis Lake area. With some variation attributable to local differences in stream habitats, the species presented in that table are suggested to be fairly representative of the range of species available to ceramic-age populations in the lower Smoky Hill basin. Mussel shells have also been recovered from other Smoky Hill phase sites, including 14CY1, 14CY2, 14CY3, 14CY4, 14CY6, 14GE21, 14GE127, 14RY8, and 14OT2 (Ritterbush and Logan 1991; Sperry 1965; Schmits et al. 1987). The presence of mussel remains in these assemblages indicates prehistoric utilization of mussels for food and/or their shells for tools, ornaments, and/or tempering material.

Table 3.2. Mussels (Unionacea) Identified at the Moll (Mall) Creek Site (Steinacher 1975:103).

<u>Fusconaia flava</u>	Wabash pig-toed mussel
<u>Amblema costata</u>	Three-ridged mussel
<u>Tritogonia verrucosa</u>	Buckhorn mussel
<u>Unio merus tetralasmus</u>	Pond-horn mussel
<u>Lasmigona complanata</u>	White heel-splitter mussel
<u>Anodonta grandis</u>	Floater mussel
<u>Proptera alata</u>	Pink heel-splitter mussel
<u>Lampsilis anodontoides</u>	Yellow sand-shell mussel
<u>Lampsilis ventricosa</u>	Plain pocketbook mussel
<u>Elliptio dilataus</u>	Lady-finger mussel
or <u>Ligumia recta</u>	Black sand mussel

Chapter 4

CULTURE HISTORICAL BACKGROUND

Brad Logan

Introduction

The culture historical sketch given here is based on what we currently know about the prehistory of the Kanopolis Lake area and of areas contiguous to it in the Central and Southern Plains subregions of the Great Plains culture area (Wedel 1961). While some of the archaeological manifestations outlined here have not yet been documented in the project area, their proximity to Kanopolis Lake and the mobility of prehistoric populations in the region suggests their potential there.

Paleoindian

Human occupation of the Great Plains prior to 11,500 years ago is poorly documented and what little evidence there is of it is controversial. A few sites such as Dutton, Selby and Lamb Springs in northeastern Colorado (Stanford 1979; Stanford et al., 1981), North Cove in south-central Nebraska (Adair 1989; Logan 1989) and Shriver in northwestern Missouri (Reagan et al. 1978) have yielded lithic or modified bone items in stratigraphic or radiocarbon dated contexts that suggest they are of pre-Clovis age. However, none of these sites has provided sufficient proof of pre-Clovis occupation of the region.

The earliest recorded human activity in the Great Plains is based on several well documented sites attributed to the Llano culture. The term Llano was originally applied to a complex of artifacts found in direct association with extinct megafauna, especially mammoth, in the southern High Plains (Sellards 1952). However, Clovis projectile points, the diagnostic artifact of the complex, have been found throughout the Great Plains and, indeed, much of North America. Haynes (1970) dates the occurrence of Clovis sites between 11,500 and 11,000 years ago. In Kansas, the Llano complex is known only from surface finds of Clovis points. At present, no sites of the complex have been excavated and no record of direct association of extinct megafauna and Llano artifacts has been documented (Brown and Logan 1986; Hofman and Hesse 1996).

The Folsom complex, which succeeded the Llano culture in most of western North America and which has been radiocarbon dated from

about 10,850 to 10,200 years B.P., may be evident at one site, Twelve Mile Creek, Scott County, Kansas, in the High Plains west of Kanopolis Lake. Its affiliation with Folsom is rather ambiguous, though the faunal association and radiocarbon dates support such an inference (Brown and Logan 1986; Hill 1996). Twelve Mile Creek is the first recorded Paleoindian site in the New World (Williston 1902, 1905). Unfortunately, it was not recognized as such until after the Folsom site in New Mexico had been granted the honor of being designated the type site of this distinctive culture (Rogers and Martin 1984). This site contained the skeletal remains of several bison of an extinct species in direct association with a projectile point. Radiocarbon dating of the bone from the site, more so than the projectile point (which lacks distinctive attributes), has indicated its Folsom affiliation. Diagnostic of the Folsom culture is a spear point that is somewhat shorter and more extensively fluted than the Clovis projectile point. Folsom points have also been recovered from surface contexts at several sites in Kansas. One of these sites is located in Barton County, west of the Kanopolis Lake area (Brown and Logan 1986).

Paleoindian complexes collectively referred to as Plano temporally overlapped or succeeded the Folsom culture in the High Plains. They are recognized by a variety of lanceolate projectile points that exhibit parallel flaking but lack fluting. Excavations at the Norton Bone Bed site in Scott County, Kansas have revealed the skeletal remains of extinct bison in association with lithic artifacts. At least one Allen point, had been recovered from the site by a collector prior to its excavation (Hofman 1996). Other points indicative of the Plano complex have been recovered throughout Kansas (Brown and Logan 1986).

Archaic

With the demise of late Pleistocene megafauna ca. 8,000-9,000 years ago, the hunters of the Great Plains shift to the hunting of modern game such as deer, elk, and bison (Bison bison) and a greater dependence on wild plant foods. Cleland (1976) has described the Paleoindian to Archaic subsistence shift as a change from a focal economy to one more accurately described as diffuse. Archaic settlement sites indicate a shift toward seasonal exploitation of resources in local microenvironments.

Information on the Early Archaic inhabitants of present-day Kansas comes from the Sutter site (14JN309) on Muddy Creek in Jackson County. Evidence from this site, buried by some 30 ft of deposits, resulted in recovery of lanceolate and square-stemmed projectile points and other tools comparable to the Frederick and McKean complexes of the High Plains (Katz 1971). Radiocarbon dates from the site cluster between 7500-8000 BP (Katz 1972).

The Middle Archaic (ca. 7,000 - 5,000 BP) coincides with the Altithermal climatic episode (also referred to as the Hypsithermal (King 1980) and Atlantic (Bryson et al. 1970) episodes). The Altithermal brought about expansion of prairie and corresponding recession of the upland and/or riverine woodlands in eastern Kansas (Gruger 1973). In the central part of the state, this regime would have affected the relative proportions of tallgrass to shortgrass species and reduced what woodland habitats had previously existed. Perhaps in response to this environmental change, Archaic hunter-gatherers adopted an economic strategy based on the use of a wide variety of plant and animal resources available in aquatic, floodplain woodland, and floodplain prairie communities. Evidence of the practice of this diffuse economy has been found at the Coffey site (14PO1), in the Big Blue River basin north of Manhattan, Kansas (Schmits 1978). This site was occupied during the late Altithermal, a time of initial woodland re-expansion about 5055 to 5270 years ago (Schmits 1978:85). At the time of its occupation, the site was near the margin of an oxbow lake. Artifacts recovered include lanceolate bifaces, basal-notched and corner-notched projectile points, gouges, axes, groundstone manos, and metates. A late Middle Archaic occupation was also represented at the William Young site in the upper Neosho River basin east of Kanopolis Lake (Witty 1982). Assigned to the Munkers Creek phase, this occupation consisted of a campsite buried from four to seven feet below the surface. Artifacts recovered include large lanceolate bifaces, knives, gouges, and axes, as well as two ceramic effigy heads. A date of about 5000 years BP has been suggested for this occupation.

Information on the Late Archaic (ca. 5000 - 2000 BP) occupation of central Kansas is provided by data from the Snyder site (14BU9) at El Dorado Lake in Butler County (Grosser 1970, 1973, 1977; Artz 1981). Evidence of Archaic activities at this site were buried in alluvial deposits below a terrace remnant along the Walnut River. These consist of three distinct phase occupations below a deposit of sterile, yellow brown clay (zone C). The uppermost Archaic occupation, the Walnut phase, yielded small, corner-notched projectile points and associated lithic tools indicative of a hunting economy. Radiocarbon dates are 1970 ± 110 year BP and 2050 ± 80 years BP. The second occupation has been assigned to the El Dorado phase. Lithic tools from this horizon include projectile points that are long, narrow, and stemmed, with straight or convex bases. Four radiocarbon dates from the El Dorado phase occupation range from 3240 ± 85 years BP to 3980 ± 100 years BP. Evidence in the form of hearths, storage pits, and a flexed burial from the El Dorado horizon suggests some degree of sedentism had been attained by this time. The variety of faunal and floral remains recovered reflects a diffuse economic adaptation. The third, and lowest, Archaic horizon at the Snyder site has been assigned to the Chelsea phase. It is characterized by projectile points with broad, oval blades, concave bases, and shallow corner-notches or side-notches. Radiocarbon dates for this

phase are 4600 ± 125 years BP and 4830 ± 105 years BP. Comparative data for the Chelsea phase occupation in central Kansas is also provided by the Milbourn site (14BU25), a base camp site (Root 1981), and the Nuttal site (14BU4), a hunting camp (Artz 1981), both in the Walnut River drainage (Johnson 1983).

The Archaic period is represented in the Kanopolis Lake area by only one component, 14EW174, and its assignment to the period is tentative (Schmits and Fosha 1996:140-143; Schmits 1996:150). Faunal remains and lithic debris were found exposed at a depth of 1.5m in the fill of an alluvial fan that has been laterally cut by the Smoky Hill River. A radiocarbon date of 5110 ± 70 BP was obtained on a buried soil at a depth of 1.98-2.30m below the surface of the fan and the cultural material is suggested to not greatly post-date that horizon. Since alluvial fan deposition along the Smoky Hill River is believed to have ceased ca. 2000 BP, the cultural horizon at this site is "confidently dated to the interval between 2000-5000 BP" (Schmits and Fosha 1996:143). The site was suggested to have been an extractive camp.

Woodland

The Woodland adaptation in the Central Plains (ca. A.D. 1-1000) is distinguished by evidence of increased sedentism (storage pits, habitation structures) and the practice of ceramic technology. A number of Woodland complexes are recognized in present Kansas, including the Keith, Schultz, Greenwood, Cuesta, and Kansas City Hopewell variants and the Grasshopper Falls, Butler, and Bemis Creek phases (Johnson, in press; Reynolds 1979; O'Brien 1984; Adair 1988). Sites in the Kanopolis Lake project area, which is just 50 km northeast of the Great Bend Prairie, have been assigned to the Woodland period (Kivett 1947; Smith 1949; Leaf 1977) and tentatively identified in terms of a more specific complex, the Keith variant (Johnson, in press).

The Keith variant is recognized at several localities in the western two-thirds of Kansas (Kivett 1949, 1953; Wedel 1959). Schmits (1996:150) assigns eight sites in the Kanopolis area to this complex, as compared to Johnson (in press), who assigns only the Elm Creek (14EW12) and Red Rock Canyon (14EW13; Smith 1949) sites to the Keith variant. Artifacts from the Elm Creek site were encountered on the beach during the shoreline survey (see chapter 6). The latter site is also associated with two burial cairns, investigated by Smith (1949:299) but not assigned any cultural affiliation by him. Johnson (in press) suggests the close proximity of these cairns to a site he assigns to the Keith variant may reflect some association. He also suggests the two sites reflect one aspect of the settlement-subsistence pattern of the Keith variant, that is, temporary hunting and gathering forays that resulted in such sites of small size and limited artifact quantities. Villages of the Keith variant have been identified in

the Medicine Creek Reservoir of southwestern Nebraska (Kivett 1949) and along an abandoned channel of Pawnee River (Arkansas River drainage) in Pawnee County, Kansas just west of the Kanopolis Lake area (Johnson, in press).

Traits of the Keith variant include a variety of burial practices, including primary and secondary burials in villages and camps, as well as primary and secondary burials in mounds and ossuaries (Strong 1935; Kivett 1949; Wedel and Kivett 1956) production of a distinctive ceramic ware (Harlan Cord-Roughened) with some evidence of spatial variability that might lead to the identification of local phases in some areas (Kivett 1953; Johnson, in press), manufacture of personal ornaments such as tubular bone beads, shell beads, and shell pendants, and the manufacture of lithic tools including corner-notched dart points, Scallorn-like arrow points, and small, triangular arrow points, as well as knives, scrapers, and grinding stones. Subsistence appears to have been a combination of hunting (bison, deer, antelope, smaller mammals, indigenous birds, and migratory waterfowl) and gathering (including mussels, fish, and wild plants). No evidence of horticulture has been found at any sites to date. Radiocarbon dates from Keith variant sites are limited to five: A.D. 607 \pm 240 (C-928) from the Woodruff Ossuary; A.D. 823 (M- 841) from 25FT18 in the Medicine Creek Reservoir (Wedel 1959:619; Johnson, in press); and, from a trash-filled pit at 25NH12, a Keith variant site in the Harlan County Lake project of southwestern Nebraska, A.D. 700 \pm 110 (UGa-5478), A.D. 900 \pm 70 (UGa-5482) and A.D. 730 \pm 55 (DIC-3325) (Adair et al. 1987:96).

Smith (1949:296-298) investigated the Ward site (14EW17), a site with ceramic and lithic assemblages indicative of the Kansas City Hopewell variant that is located on a branch of Ash Creek, a tributary of the Smoky Hill River about ten miles south of Ellsworth (a few miles north of the Great Bend Prairie). He suggested the site offered the first definite evidence of a Hopewellian habitation west of the 98th meridian. However, Johnson (in press) suggests that this site reflects contact between local Woodland groups and those of the Cooper variant of southeastern Kansas. The Cooper variant and other Woodland complexes of eastern Kansas, such as the Cuesta phase and Schultz "focus", are characterized by traits reflective of contact with the Kansas City Hopewell population of northeastern Kansas and northwestern Missouri.

Late Prehistoric

Cultures of this period (ca. A.D. 900-1500), also called Plains Village, differ from those of the Woodland period not only by distinctive lithic and ceramic assemblages but by evidence of an increasing reliance on domestic plant foods, including corn, beans, squash, sunflowers and marshelder. Although the degree of reliance

on cultigens has not been satisfactorily quantified, it is believed to have been significant (Wedel 1959:627; Adair 1988). The practice of small scale horticulture in combination with a continued dependence on hunting and gathering led to a more sedentary life-style than that of Plains Woodland groups.

Five complexes of the Late Prehistoric period, at least one of which appears to have extended into the Protohistoric period, may have figured in the culture history of the Kanopolis Lake area. These are the Upper Republican and Smoky Hill phases of the Central Plains tradition (CPT) and three more poorly understood complexes, Pratt, Bluff Creek and Wilmore. Smith (1949:295-297) suggests that "a number of small sites throughout the Kanopolis Reservoir" contained evidence of the Upper Republican culture. Particular reference was made to the Elm Creek site (14EW12) in this regard. Leaf (1977), however, assigns nine sites in that lake area, including the Elm Creek site, to the Smoky Hill phase and none to the Upper Republican. A brief discussion of these archaeological cultures and complexes is warranted here.

Smoky Hill was first proposed by Wedel (1959:563) as one of three divisions of the Central Plains tradition, the others being the Upper Republican and Nebraska cultures. All three phases, or variants (cf. Krause 1969:95), are characterized by the remains of isolated house structures or small, unfortified, periodically-occupied villages (Logan 1996). Such sites are more frequently encountered along tributary streams rather than major rivers. There is some variability in house form (Brown 1967:43; Witty 1978:56-57; Blakeslee and Caldwell 1979:27, 34, 109), however, the basic pattern is the sub-rectangular earth lodge with four main roof supports, a central hearth, cache pits, and extended entryway. CPT pottery is cordmarked or smoothed-over and has straight, flared, or collared rims. Lithic artifacts include small, triangular projectile points (notched and unnotched forms), small end scrapers, diamond-shaped knives, and sandstone shaft abraders. Subsistence included hunting and gathering, as well as horticulture (Wedel 1959; Brown 1982; Adair 1988).

The distinguishing factors between the Upper Republican and Smoky Hill variants is in their ceramic ware and geographical locations. Smoky Hill pottery, identified as Riley Cord-roughened, is generally tempered with sand or gravel, but crushed sherds and bone also were utilized (Wedel 1959:563-564). The latter inclusions are most distinctive of the Smoky Hill complex (Kelly 1968; Witty 1963). Upper Republican ware is tempered with sand or gravel (Wedel 1959:559). According to Johnson (1973:297), the Smoky Hill culture is centered in the "Prairie-Plains border of north-central Kansas (north of the Smoky Hill River) and probably also of southern Nebraska". Adair (1988), in an analysis of the transition from Woodland to Plains Village adaptations in terms of reliance on domesticated plants, identifies the core area as the lower Kansas, Republican, Solomon, and Smoky Hill rivers. The

Upper Republican variant is located in southwestern Nebraska and northwestern Kansas "mainly west of the Smoky Hills and north of the Arkansas River" (Wedel 1959:562). While Smoky Hill was once suggested to have been ancestral to both Upper Republican and Nebraska (Wedel 1959:565), recent research has shown considerable temporal overlap among all three (Brown 1967:48-52; Blakeslee and Caldwell 1979:20; Baerreis and Bryson 1965:71).

In contrast to the relatively well known archaeological cultures of the Central Plains Tradition are three complexes as yet poorly defined that existed in present Kansas south of the Arkansas River during Late Prehistoric time. The first of these to be recognized is the Pratt complex, our knowledge of which is yet based primarily on two sites. The type site, 14PT1, yielded to Eugene Wing, a local collector, about 150 artifacts that were sent to and reviewed by Wedel at the U.S. National Museum in the early 1950s (Wedel 1959:503-512). This small assemblage and Wedel's analysis of it were the basis for the Pratt complex.

In the ceramic sample of 100 potsherds, Wedel tentatively recognized five wares. The predominant ware, represented by 60 sherds, consisted of a cordroughened, sand tempered material from what Wedel inferred to have been moderately large jars. Rims were simple, unthickened, from 1.5 to 5.0 cm high, and everted. Decoration, when present, was in the form of short diagonal incisions or punctations. Appendages were represented only by a single vertically placed lug on one rim sherd. A second ware is comparable to that described but plain. The other wares, decidedly in the minority, are reminiscent of sherds from sites of the Great Bend and Dismal River cultures. A few sherds of Southwestern pottery in the assemblage were identified as Rio Grande Glaze and Biscuit B (Bandelier Black-on-gray). Cross-dating of these sherds suggested a pre-European contact date for the complex.

Lithics included triangular arrow points, a dozen of which had a single pair of lateral notches, another an additional basal notch and one was unnotched. Recent seriation of such points from several Plains Village sites suggests this sample dates to the late years of the Late Prehistoric period (Billeck 1993). Other chipped and groundstone tools in the Pratt site assemblage are generic Late Prehistoric-Protohistoric artifacts. Exotic items that might indicate trade include turquoise, obsidian, and tools of Alibates dolomite. Bone tools include awls, "squash knives", scored rib fragments and, possibly diagnostic of the complex in Kansas, digging stick heads made from bison tibiae.

On the basis of the small assemblage he reviewed, Wedel (1959:510) suggested the complex dated to ca. A.D. 1400-1500. Confirmation of this general placement is provided by the only other site that has thus far given us insight to Pratt, the Lewis site (14PA307), which is about 55mi southwest of Kanopolis Lake. Excavated by Earl Monger (1970), an avocational archaeologist, and

recently reanalysed in a Master's thesis by Ranney (1994), the site contained four stratified components attributed, from the lowest stratum to the uppermost respectively, to the Smoky Hill phase, Pratt complex, Great Bend aspect and an unnamed culture referred to only by its locally unique ceramics as "Larned Fine Line".

The Pratt component at Lewis was represented by remains of six houses of semi-rectangular outline and pole-framework with central hearth, interior storage pits and adjacent midden. Artifacts recovered consisted of ceramics comparable to the Pratt complex were described by Wedel, lithics including projectile points, scrapers and drills (comparable to Great Bend tools but exhibiting "better finish work"), shaft smoothers, a maul, stone bead, clay pipes, bone tools including awls and scored ribs, worked shell, hematite, and faunal remains including elements of bison, deer, smaller mammals, birds, fish and turtle. Lewis provides relative temporal placement of the Pratt complex between the Cpt and the Great Bend culture (Protohistoric Wichita).

To the south of the Pratt complex sites, near the Kansas-Oklahoma border and centered along a tributary of the Chikaskia River called Bluff Creek is the archaeological complex of that name. It is as yet unclear whether this complex extended to the Kanopolis Lake area. The few sites assigned to it include Anthony (14HP1; Munsell 1961), Armstrong (14HP5; Gould 1975), Nulik (14SR305) and Buresh (14SR303; Witty 1969, 1978), and Hallman (Thies 1989). Gould (1975) recorded a number of sites apparently affiliated with this complex as a result of his survey of Bluff Creek. Most of the information about the complex comes from the Buresh and Nulik sites (which may have been a single site on adjacent properties; Witty 1969:1), excavated by the Kansas State Historical Society in the summer of 1969. Unfortunately, detailed information about the findings of this project has yet to be published. From the little that is available, it appears that the complex shares affinities with both the Central Plains tradition and the Washita River phase of the Southern Plains. Houses excavated at Nulik-Buresh are of variable form, including square, rectangular and oval. Only one had a central hearth, one of the hallmarks of Cpt houses. Daub construction was reflected by abundant amounts of this material on the floors of all houses. Both interior and exterior storage pits of cylindrical shape were present. Large trash-filled borrow pits were associated with each house. Recent excavation of the Hallman site by the Kansas Anthropological Association Training Program revealed a series of disjunct linear "trenches" less than a meter wide and about a half a meter deep. The function of these trenches, which were in the proximity of a house, remains unknown.

The Hallman site is significant in another respect. Prior to excavations in the lowlands below the bluff top component at that site the Bluff Creek settlement pattern had been known only from upland habitations. The valley terrace component at Hallman

consisted of deep cultural deposits indicative of prolonged settlement periodically interrupted by flooding (Theis 1989).

The artifact assemblage is typical of Late Prehistoric cultures and includes side and basal notched arrow points, alternately beveled knives, a variety of bone tools (bison scapula hoes being the most common), and ceramics that range in form from conical ("amphora-like", Witty 1978:63) to globular in shape with flat to slightly concave bases and strap handles. The exterior surfaces of the pottery may be either cordmarked or plain and tempering consists of sand and crushed or burned bone. Rims are direct or plain collared, like those of CPT ceramics. A minority ware that is tempered with shell, smoothed over, with strap handles and applique decoration has been compared to Washita phase pottery and referred to as "trade ware" (Witty 1978:63).

Only three radiocarbon dates are yet available for the Bluff Creek complex. These are 900 ± 110 from House 1 and A.D. 1080 ± 90 from House 2 at Buresh and A.D. 1190 ± 110 from House 1 at Nulik (Brown and Simmons 1987:E-9). Unfortunately, all three dates are from the notoriously unreliable laboratory at Gakushuin University and cannot be taken seriously. Additional dates for this complex are urgently needed to verify its Late Prehistoric temporal placement.

The Wilmore complex, named for the town in Comanche County, south-central Kansas, that is near the only two sites from which our information about it comes, was previously thought to be another Late Prehistoric manifestation with Southern Plains ties. Its definition was based on data recovered from the Bell site (14CM407), which is located on the floodplain of Mule Creek, a tributary of the Cimarron River (Rowlison 1985). Excavations at the site by the KAA Training Program in 1984 revealed a semi-subterranean pit house with central hearth and nearby trash-filled borrow pits. A composite charcoal sample from the two borrow features yielded a date of A.D. 1170 ± 160 (Theis 1985).

Ceramics from the Bell site are monotypic and consist of globular, cordmarked vessels with sand temper or inclusions of gypsum, bone, and shell. They may have strap or lug handles and are occasionally decorated with vertically pinched appliques or small nodes on the neck and shoulder, stick-impressed lips and scalloped or crenated rims. Lithics include the usual assortment of late prehistoric tools, such as side-notched, triangular arrow points, beveled knives, and sandstone abraders. Interestingly, medium-sized, corner-notched points more comparable to Plains Woodland projectiles were also recovered. Subsistence is believed to have been based primarily on bison hunting. Agriculture could only be inferred from the presence of grinding slabs and metates (Rowlison 1985; Brown and Simmons 1987:XVII-2).

More recent information has come to light as a result of the 1989 KAA Training Program dig at the Booth site, which is only 1.4 km from the Bell site but situated on an upland toe. Excavations revealed a tentatively identified pit house, both cylindrical and bell-shaped pits, and possible borrow pits. The truncation of some pits by others indicated prolonged occupation. Of more interest is the recovery of obsidian artifacts that total 5% of the lithic debitage and a small sample of Southwestern pottery sherds. A single radiocarbon date of A.D. 1510 \pm 100 was also obtained on a charcoal sample. Given calibration of the C¹⁴ date, cross-dating of the sherds and our current understanding of the timing of obsidian trade between the Southwest and Southern Plains, an occupation ca. A.D. 1600-1700 has been suggested, at least in part, for the Booth site (Lees 1991). Given the suggested relationship between the Wilmore and Bluff Creek complexes, these temporal findings may indicate an ancestral relationship between the latter and the former. Certainly, more data are required to better understand the nature of the relationship among the three complexes of south-central Kansas described here and those of their Southern and Central Plains contemporaries. For our purposes, it is sufficient to note that evidence of any or all three might be found in the Kanopolis Lake area.

Protohistoric

This period (ca. A.D. 1500-1700) in Missouri, Nebraska, and Kansas is represented by complexes identified, through the direct-historical approach, as proto-Pawnee (Lower Loup phase), proto-Plains Apache (Dismal River phase), proto-Missouri (Oneota), and proto-Wichita (Great Bend "aspect"; Wedel 1936, 1959, 1979; Gunnerson 1960; Chapman 1980). Of these complexes, those most relevant to the Kanopolis Lake area are the Great Bend and Dismal River cultures.

The Dismal River "aspect" represents ancestral Apacheans in the Central Plains whose sites can be readily distinguished by certain traits, including a simple but distinctive pottery called Lovitt Plain and Lovitt Simple Stamped (which may actually be a single ware arbitrarily distinguished on sherds from the same vessel that exhibit different surface treatments). Other hallmarks are roasting or baking pits with bell-shaped cross sections, fired walls and often with burned-rock covered floors; tubular ceramic pipes sometimes referred to as "cloud blowers" that are reminiscent of Southwestern pipes; double bitted drills; house structures that appear archaeologically with five-post base patterns; absence of storage pits; and presence of trash-filled borrow pits.

Dismal River sites appear in a variety of topographic settings from the Black Hills in South Dakota through the western half of Nebraska and Kansas, eastern Colorado and the Oklahoma Panhandle. All village sites occur in the eastern portion of this range where

rainfall conditions permitted more sedentism among these corn growing peoples. The western sites appear as small, more temporarily occupied camps. At least one site, the famous "El Cuartelejo" or Kansas Pueblo in Scott County, has ruins of a seven room stone habitation (sometimes attributed to refugee Puebloans from Taos or Picuris) and remains of irrigation ditches (Gunnerson 1960, 1968, 1987:102-106). Trade with Southwestern groups is evidenced at some sites by such exotic items as Puebloan potsherds of a type called Ocate Micaceous or painted types such as Tewa Red-on-Buff; obsidian and turquoise from New Mexico, Olivella shell beads and a few Pueblo style shaft straighteners (Gunnerson 1987:105). Contact with Euroamericans is limited to an iron trade ax found in a hearth at White Cat Village in south-central Nebraska, which Gunnerson (1987:105) suggests may have been left by a Pawnee raiding party, and two gunflints from that site. Other sites have yielded a few scraps of metal and such artifacts as jinglers and awls.

The Dismal River culture has been dated by dendrochronology and cross-dating of Puebloan pottery to a relatively brief period ca. A.D. 1675-1725. D. Gunnerson (1974) has demonstrated that many of the Dismal River people merged with the Jicarilla Apache to become the Llanero Band about A.D. 1730. Others many have joined the Lipan. Gunnerson and Gunnerson (1971) have suggested that the Northern Dismal River people may have become the Kiowa Apache. The disappearance of Dismal River in the late 1720s has been attributed to pressure from other Plains groups, such as the Pawnee and Comanche (D. Gunnerson 1974; Gunnerson 1987).

The Great Bend culture has long been identified as the Quivera referred to and encountered by the Spanish under Coronado during his entrada to the Arkansas River basin in 1541. These people are the historic Wichita, a Caddoan-speaking people now resident in Oklahoma. Archaeologically, two phases ("foci") of the Great Bend culture are recognized, Little River and Lower Walnut (Wedel 1959:571- 589). The latter, centered on the Walnut River near its confluence with the Arkansas River, is considered by Wedel (1959: 571) to be somewhat different from the former, which is better known from several excavated sites in Rice and McPherson counties. The Little River phase extends from the Arkansas River to the Smoky Hill River in the counties mentioned, where it is known from the Tobias, Thompson, Major, Hayes, Malone, Paint Creek, and Swenson village sites. These sites are located on terraces or bluffs along tributary streams. Low, extensive middens with associated bell-shaped cache pits are characteristic features at these sites. Evidence of house structures, while present, is not sufficient to delineate their nature. Other distinctive features, originally called "council circles" (Wedel 1959:574) have more recently been suggested as solstice registers (Wedel 1967, 1977).

Great Bend sites are known for their abundant and varied artifact inventories. Ceramic artifacts of the Little River com-

plex consist of "mediocre quality" utilitarian ware (called Geneseo Plain, Geneseo Simple Stamped, or Little River Cord Roughened) that is grit or sand tempered (Wedel 1959:574; Smith 1949:295). Exterior surfaces are generally smooth and decorative elements, when present, are limited to the addition of incised fillets or nodes. The lithic assemblage includes triangular projectile points, small end scrapers, knives, drills, choppers, grooved mauls, manos and metates, sandstone shaft abraders, and groundstone pipes. Worked bone, including the bison scapula hoe, is common.

Contact between the Great Bend peoples and Euroamericans, either directly or indirectly, is evidenced at some sites by the presence of such artifacts as chain mail fragments, iron, brass, and glass beads. This contact may have occurred late in the Great Bend period (Wedel 1959:586-587). Evidence of contact with southwestern Puebloan groups is evidenced by the presence of small quantities of Rio Grande pottery ware at some sites (Smith 1949; Wedel 1942, 1959). Evidence of the Great Bend culture has been documented at all of the sites evaluated during this project.

Historic

This period, which post-dates A.D. 1700, is represented in the project area by occupational, transhumant, or mortuary (e.g., Lees 1992) evidence of such Indian groups as the Wichita, Cheyenne, Comanche, Kiowa and Kiowa Apache. More ubiquitous and obvious, however, are numerous Euroamerican sites. Lees (1988; 1996) presents summary descriptions of historic archaeology conducted in Kansas and a variety of research problems which can be addressed during investigation of historic sites. Examples of those which can be found in the project area include agricultural settlements, bridges or fords, civic sites, artifact scatters datable to the 19th and 20th centuries, historic trails, isolated finds of agricultural implements, cemeteries, agricultural outbuildings, and miscellaneous sites.

Lees and Shockley (1986) describe examples of the sites listed above that have been recorded in the Kanopolis Lake area. They present a hypothesis for interpretation of the historic archeology of the region that suggests its early settlements reflect a male-oriented, isolated frontier economy and the later settlements reflect a transformation to a more sex-balanced, permanent, agrarian economy. A second hypothesis is based on the fact that late 19th and early 20th century settlement in the Kanopolis area was increasingly based on large-scale ranching. They also suggest that the differences in the distribution of wealth obtained as a result of such an economy will be reflected in the material culture at sites of that time.

The most recent archaeological investigations of historic sites in the Kanopolis Lake area occurred in 1996 at Forts

Ellsworth and Harker, two 19th century military outposts. Remains of earth-dugouts at the former, which existed from 1864-1866/67, were investigated by archaeologists from the Kansas City District, U.S. Army Corps of Engineers in association with the Kansas Archeology Training Program of the Kansas Anthropological Association (Reichart 1997). At the same time, the KAA training program focused on nearby Fort Harker, in the town of Ellsworth, which was active from 1866/67 to 1872/73 (King 1997).

Chapter 5

NATIONAL REGISTER OF HISTORIC PLACES EVALUATION OF 14EW3, 14EW6, AND 14EW19

Brad Logan

Introduction

National Register of Historic Places evaluation of three prehistoric sites, 14EW3, 14EW6 (Thompson Creek), and 14EW19, was undertaken September 26-October 4. A total of 417 person hours was devoted to this investigation, which was done by a crew of four to seven persons. The Principal Investigator (PI) was present in the field September 26-27 and September 29-October 4. Participants in the field work throughout the project were William E. Banks, Ph.D. graduate student in anthropology at the University of Kansas, and Scott Bossell, Daniel Pugh, and Jason Roberts, undergraduate anthropology students at KU. The project gained significant logistical and excavation assistance from two local avocational archaeologists, both members of the Kansas Anthropological Association: Greg Jackson of Salina and Bill Stone of Kanopolis. These two volunteers joined us from September 29-October 3 and contributed 80 hours of the total given above. Except where noted in the following sections, the methods of site investigation employed during the project are those described in chapter 2.

14EW3

Site Name: None
Cultural Affiliation: Woodland, Great Bend
Topographic Setting: T-1 Terrace
Parent Material: Alluvium, Colluvium and Loess
Drainage: Alum Creek
Original Surveying Agency: Smithsonian Institution
Site Size: ca. 3600m² (portion not inundated)
Surface Visibility: 50%
Slope: 3-7%
Ground Cover Vegetation: Trees and brush
Month/Year of Field Investigation: October 1997
Land-Use: None
Elevation: 1460-1470 ft amsl

This site was recorded during the Smithsonian Institution Missouri River Basin Survey in 1946 (Kivett 1947). It was on a terrace on the east side of Alum Creek. Kivett (1947) did not single out this occupational site for further description, as he did for 14EW6 and 14EW19. The original site form describes the site as extending one half to three fourths of a mile along Elm

Creek and extending, according to "tests" and cut-bank exposures, to a depth of 12-18 inches. The fill contained burned earth, charcoal, and ash in a black sandy soil and the plowed surface of the terrace yielded "cord marked sherds, stones, ash, flint and animal bones". The lithic material included "arrowheads". On the site form, Kivett suggested that the "site appears to be one of [the] best in [the] area and will be covered with water".

In 1976, the site "was covered with brush and high weeds, so surface area could not be determined" (Leaf 1977:24). Wave action was then eroding the site and a surface collection was made on the eroded beach on the south side of the site. Leaf noted that the site had been completely inundated during times of high water. Artifacts collected at this time included "two polymorphous cores ..., a mano fragment ..., a number of chert and quartzite flakes, 2 pieces of burned but unworked sandstone, and 12 pieces of bone" (Leaf 1977:24). Among the latter were human remains, including a mandibular fragment and the distal end of a humerus. Eighteen ceramic sherds found during the survey were used to assign the site to the Woodland (Keith variant) and Great Bend cultures.

The 1986-1987 Kanopolis survey of the site described it as extending over 3150 m². The site is shown as extending along both sides of a gully, though artifacts were only found in shovel tests on the beach and others were seen in the water offshore (lake elevation-1463 ft amsl). The beach and gully had "received heavy erosional impacts as a result of fluctuations in the multipurpose pool" and "tree roots were exposed down to a depth of 50 cm below surface" (Schmits and Fosha 1996: 81). Only 26 artifacts were collected from the beach. These included ten ceramic sherds, five chipped stone tools, seven pieces of lithic debris, one manuport, and three bone fragments. The ceramics were compared to those collected by Leaf and identified as Harlan Cord Roughened ware, indicative of a Woodland (Keith variant) occupation. Lithic tools included one Scallorn arrow point, one flake scraper and three edge-modified flakes; the bone was from a large animal, perhaps bison. No evidence of a Great Bend culture occupation was found. Although the site was then being eroded, it was suggested that "intact deposits may be present along the upper slope area of the site" (Schmits and Fosha 1996:85).

The 1997 Kanopolis Lake project entailed a survey of the beach and test excavation of four units in a drift and deadwood area beyond it (Figs. 5.1-2). Several artifacts, including debitage, chipped stone tools, pottery, and manuports, were found within an area less than 1,000m² along the beach more than 50m west of the gully. No artifacts were found on the beach on the east side of the gully. The artifacts generally occurred at the same elevation along the beach, several meters from the water's edge, and in association with a dark band of soil. Yet, it was difficult to discern whether they were eroding from the A horizon or had been deposited along a wave-erosional strand line. That the former is

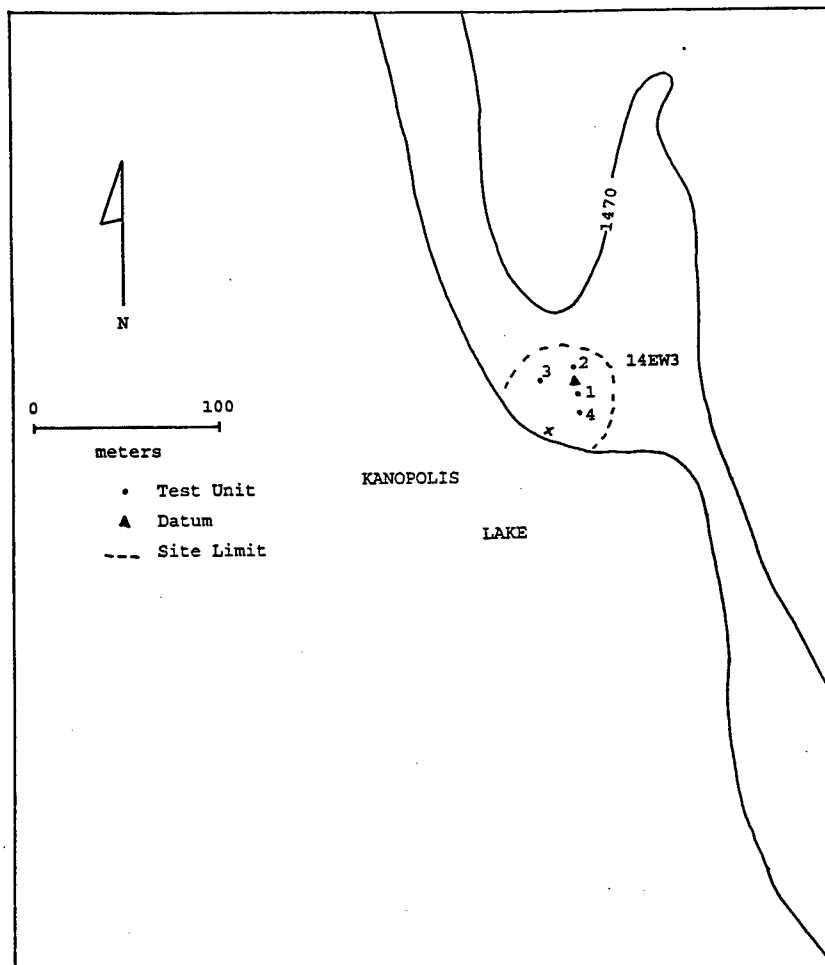


Figure 5.1. above) Map of 14EW3 Showing Location of Test Units 1-4. X Marks Location of Person in Photo Below; below) 14EW3, View Northwest. Man on Beach Stands at Artifact Concentration.

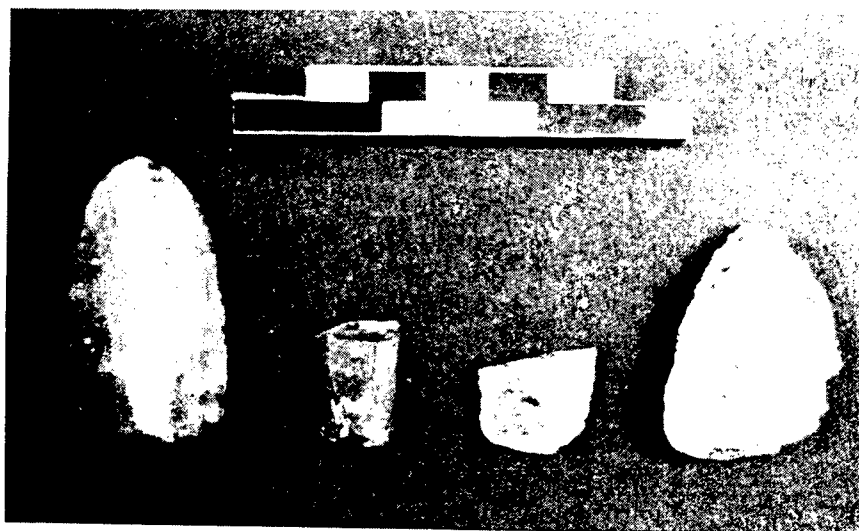


Figure 5.2. above) View South from 14EW3 Datum Showing Excavation of TU4 (TU1 in foreground); below) Artifacts from 14EW3; end scrapers at left and third from left and biface at right from beach collection; end scraper second from left from TU2.

possible is suggested by our recovery of artifacts from the A horizon in all test units (see below). It is also unlikely that the few manuports recovered from the beach were washed in from off-shore deposits. However, the significantly greater density of artifacts within a restricted area on the beach compared to those from test units dug just 25-40m distant supports the interpretation that they were deposited by wave action. It is possible that both interpretations are valid since they are not mutually exclusive.

All pottery, chipped stone tools, and a sample of the variety of raw materials represented by debitage were collected from the beach. Analysis of the assemblage, particularly the ceramics, suggests Woodland, Great Bend and, perhaps, Smoky Hill phase occupations are represented, though the last affiliation is tentative. Most of the 36 body and two rim sherds are vertically cordmarked, like Woodland ware, but a few are plain and temper is variable. The exterior surfaces of several sherds are too eroded for identification of surface treatment. Chipped stone tools include one small, edge-retouched flake arrow point, end scrapers, and bifaces (Fig. 5.2), as well as edge-modified flakes. Raw materials represented include Permian (Flint Hills) cherts, as well as Niobrara and other materials from the western, High Plains of Kansas. The manuports include hammerstones and two possible grinding stone fragments. A few pieces of burned bone were also recovered, though these are not identifiable.

Test excavations revealed ca. 10cm of sand overlying the A horizon (Fig. 5.3). No artifacts were found in the sand sheet. In 1986-1987, this recent mantle was described as 50cm thick along the lower part of the site (Schmits and Fosha 1996:84). It is possible that much of the sand sheet was scoured during the 1993 flood. Four units were dug, three along a northward line several meters inland from the artifact concentration on the beach. A fourth was dug west of the line and about 25m northeast of a second area on the beach where a few isolated artifacts had been found. All units revealed comparable stratigraphy (Fig. 5.3): 10cm of sand over ca. 20cm of a dark grayish brown sandy silt loam (the A horizon), ca. 30cm of a mottled dark grayish brown and light yellowish brown sandy silt (AB horizon), and a dark yellowish brown to yellowish brown sandy silt (the B horizon) to the base of all units.

TU1 was dug to 90cm; TU2 to 100cm; TU3 to 50cm; and TU4 to 60cm. The lowest levels of units 1-3 were quite moist, indicating the upper portion of the water table had been reached. Most of the artifacts recovered in all units were found in the A horizon and decreasing amounts of cultural material in the AB horizon are attributable to downward dislocation through natural disturbance processes, including rodent burrowing and tree growth. The mottled nature of the AB horizon shows the affect of these processes. Artifacts were rarely found in the B horizon and undoubtedly reflect similar dislocation from the A horizon. Of the 43

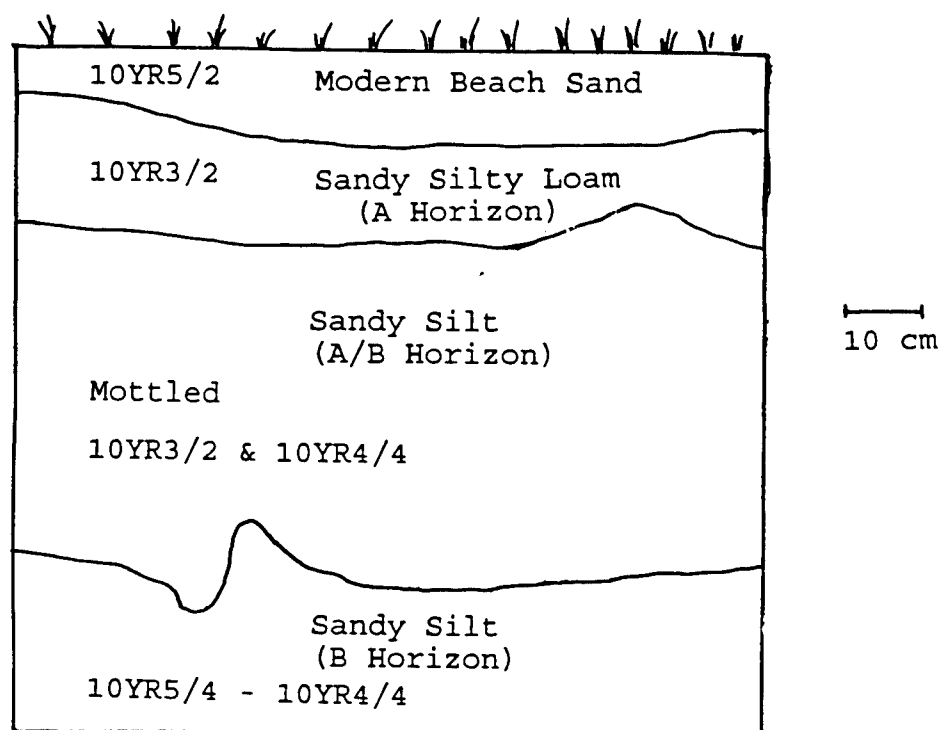


Figure 5.3. Photograph and Profile of North Wall of TU2, 14EW3.

artifacts recovered from all the units, 29 (67%) came from the upper 30 cm, 13 (30%) from 30-60cm, and only one (2%) from below 60cm. Artifacts recovered from the units include debitage, a few chipped stone tool fragments (e.g., the distal end of an end scraper, Fig. 5.2), and some burned bone (Table 5.1).

No features were encountered in any unit and the artifact density was fairly light. Given the density of artifacts on the beach and the belief that they may have eroded from the A horizon and, perhaps, have been redeposited from offshore, it is suggested that the small portion of the site beyond the beach is peripheral to the area of greater artifact density. Thus, most of this site, originally described as extensive, has been destroyed by the lake. As no significant, stratified deposits were found during our investigations, this site is not recommended for NRHP nomination.

Table 5.1. Cultural Material from 14EW3.

		TU1	TU1	TU1	TU1
	<u>Surface</u>	<u>0-10</u>	<u>10-20</u>	<u>20-30</u>	<u>30-40</u>
Rimsherd	2	-	-	-	-
Bodysherd	36	-	-	-	-
Projectile Point	2	-	-	-	-
Biface	3	-	-	-	-
Endscraper	3	-	-	-	-
Sidescraper	1	-	-	-	-
Informal Scraper	2	-	-	-	-
Perforator	1	-	-	-	-
Edge-mod. Flake	4	-	-	-	-
Flake	33	2	2	2	2
Chip	-	-	-	-	-
Chunk	3	-	-	-	-
Bone	-	-	-	-	-
Burned Bone	6	-	-	-	-
Tooth	1	-	-	-	-
Tooth Enamel	-	-	-	-	-
Sandstone	-	-	-	-	-
Burned stone	-	1	-	2	-
Mano	2	-	-	-	-
Hammerstone	1	-	-	-	-
Tested piece	2	-	-	-	-

Table 5.1. Cultural Material from 14EW3 (continued).

	<u>TU1</u> <u>40-50</u>	<u>TU1</u> <u>70-80</u>	<u>TU2</u> <u>10-20</u>	<u>TU2</u> <u>20-30</u>	<u>TU2</u> <u>30-40</u>
Rimsherd	-	-	-	-	-
Bodysherd	-	-	-	-	1
Projectile Point	-	-	-	-	-
Biface	-	-	-	-	-
Endscraper	-	-	-	1	-
Sidescraper	-	-	-	-	-
Informal Scraper	-	-	-	-	-
Perforator	-	-	-	-	-
Edge-mod. Flake	-	-	-	-	-
Flake	-	-	-	2	-
Chip	2	-	-	-	-
Chunk	-	-	-	-	-
Bone	-	-	1	-	-
Burned Bone	-	1	3	-	-
Tooth	-	-	-	-	-
Tooth Enamel	-	-	-	-	-
Sandstone	-	-	-	1	-
Burned stone	-	-	-	-	-
Mano	-	-	-	-	-
Hammerstone	-	-	-	-	-
Tested piece	-	-	-	-	-

Table 5.1. Cultural Material from 14EW3 (continued).

	<u>TU3</u> <u>10-20</u>	<u>TU3</u> <u>40-50</u>	<u>TU4</u> <u>0-10</u>	<u>TU4</u> <u>10-20</u>	<u>TU4</u> <u>20-30</u>
Rimsherd	-	-	-	-	-
Bodysherd	-	-	-	-	-
Projectile Point	-	-	-	-	-
Biface	-	-	-	-	-
Endscraper	-	-	-	-	-
Sidescraper	-	-	-	-	-
Informal Scraper	-	-	-	-	-
Perforator	-	-	-	-	-
Edge-mod. Flake	-	-	-	-	-
Flake	3	1	2	2	1
Chip	-	-	-	3	-
Chunk	-	-	-	-	-
Bone	-	-	-	-	-
Burned Bone	-	-	-	-	1
Tooth	-	-	-	-	-
Tooth Enamel	-	-	-	-	-
Sandstone	-	-	-	-	-
Burned stone	-	-	-	-	-
Mano	-	-	-	-	-
Hammerstone	-	-	-	-	-
Tested piece	-	-	-	-	-

Table 5.1. Cultural Material from 14EW3 (continued).

	TU4 <u>30-40</u>	TU4 <u>40-50</u>	TU4 <u>50-60</u>
Rimsherd	-	-	-
Bodysherd	-	-	-
Projectile Point	-	-	-
Biface	-	-	-
Endscraper	-	-	-
Sidescraper	-	-	-
Informal Scraper	-	-	-
Perforator	-	-	-
Edge-mod. Flake	-	-	1
Flake	-	-	-
Chip	-	-	1
Chunk	-	-	-
Bone	2	1	-
Burned Bone	-	-	1
Tooth	-	-	-
Tooth Enamel	1	-	-
Sandstone	-	-	-
Burned stone	-	-	-
Mano	-	-	-
Hammerstone	-	-	-
Tested piece	-	-	-

14EW6

Site Name: Thompson Creek
 Cultural Affiliation: Woodland, Great Bend
 Topographic Setting: T-1 Terrace
 Parent Material: Alluvium
 Drainage: Thompson Creek
 Original Surveying Agency: Smithsonian Institution
 Site Size: Unknown
 Surface Visibility: 0%
 Slope: <3%
 Ground Cover Vegetation: Trees, brush, alluvium
 Month/Year of Field Investigation: October 1997
 Land-Use: Fishing Access
 Elevation: 1460-1470 ft amsl

The Thompson Creek site was the subject of two significant publications by Carlyle S. Smith (1949, 1950), which described its stratified components of Protohistoric (Great Bend; Zones A and B), Woodland (Zone C), and unidentified (Zone D) cultures that were separated by flood deposits. Kivett (1947:6) only mentioned the presence of exposed cultural materials at depths of "2 to 5 feet below the present surface" in his original description of the site.

Smith (1949, 1950) documented the cultural horizons in more detail and recognized their importance concerning past climatic change.

Level A, which was "overlain by humus and massive sediment" (Smith 1949:293) contained flecks of charcoal and traces of ash. This horizon dipped from a depth of 1.5ft from the Smoky Hill side of the profile to 3.75ft along Thompson Creek. Sherds of Geneseo Plain pottery identified the horizon as Great Bend. The exposed portion of Level B, "overlain by a deposit of compact silt", revealed charcoal, white ashes lenses, and "several basin-shaped hearths" (Smith 1949:293). This stratum dipped from its contact with Level A on the northern (Smoky Hill River) end of the profile to a depth of 4.6ft near Thompson Creek. It yielded 100 sherds of Geneseo Plain, 17 sherds of Geneseo Simple Stamped, a triangular arrow point, three side scrapers, two sandstone abraders, one piece of polished bone, and "numerous animal bones" (Smith 1949:294). Level C, also "overlain by a deposit of massive sediment", contained a "few basin-shaped hearths filled with white ashes and underlain by burned earth" (Smith 1949:294). This stratum dipped from a contact with Level B on the north to a depth of 5.75ft along Thompson Creek. Two sherds from this level were examples of either Late Prehistoric ("Upper Republican") or Woodland ware (Smith 1949:294). Again, this level yielded charcoal and pieces of broken animal bone. Level D, "overlain by a deposit of compact silt", also contained basin-shaped hearths. This stratum did not contact the level above it on the northern end of the profile but appeared there at a depth of 3.25ft and dipped toward a depth of 6.75ft near Thompson Creek. It yielded no diagnostic material, only a few pieces of animal bone.

Smith (1949:294; 1950) suggested the strata at 14EW6 and their separation by sterile zones of sediment indicated the site was occupied periodically between times of flooding by the Smoky Hill River and Thompson Creek. By today's standards Smith's profile description is too sketchy. It is clear, however, that this site could have contributed more information about the culture history of the Kanopolis area and relations between human adaptations and the late Holocene climate of the Central Plains. Unfortunately, Smith's investigations were interrupted by inundation of the lake and no archaeologists since have seen any evidence of the site (e.g., Leaf 1977:30). Our investigations indicate that its deposits have been scoured and/or buried and that, if any remain, they are below the current watertable.

From September 26-29, a team of five to seven persons investigated the area indicated on the original site form as including 14EW6. A series of shovel tests dug along both sides of the road that crosses the site failed to yield any cultural material. As the site could not be found through that method, a series of five test units was dug in the area shown on the site form, on a narrow finger of land bounded on the north by Smoky Hill River and on the south by Thompson Creek (Figs. 5.4-5). Two of the

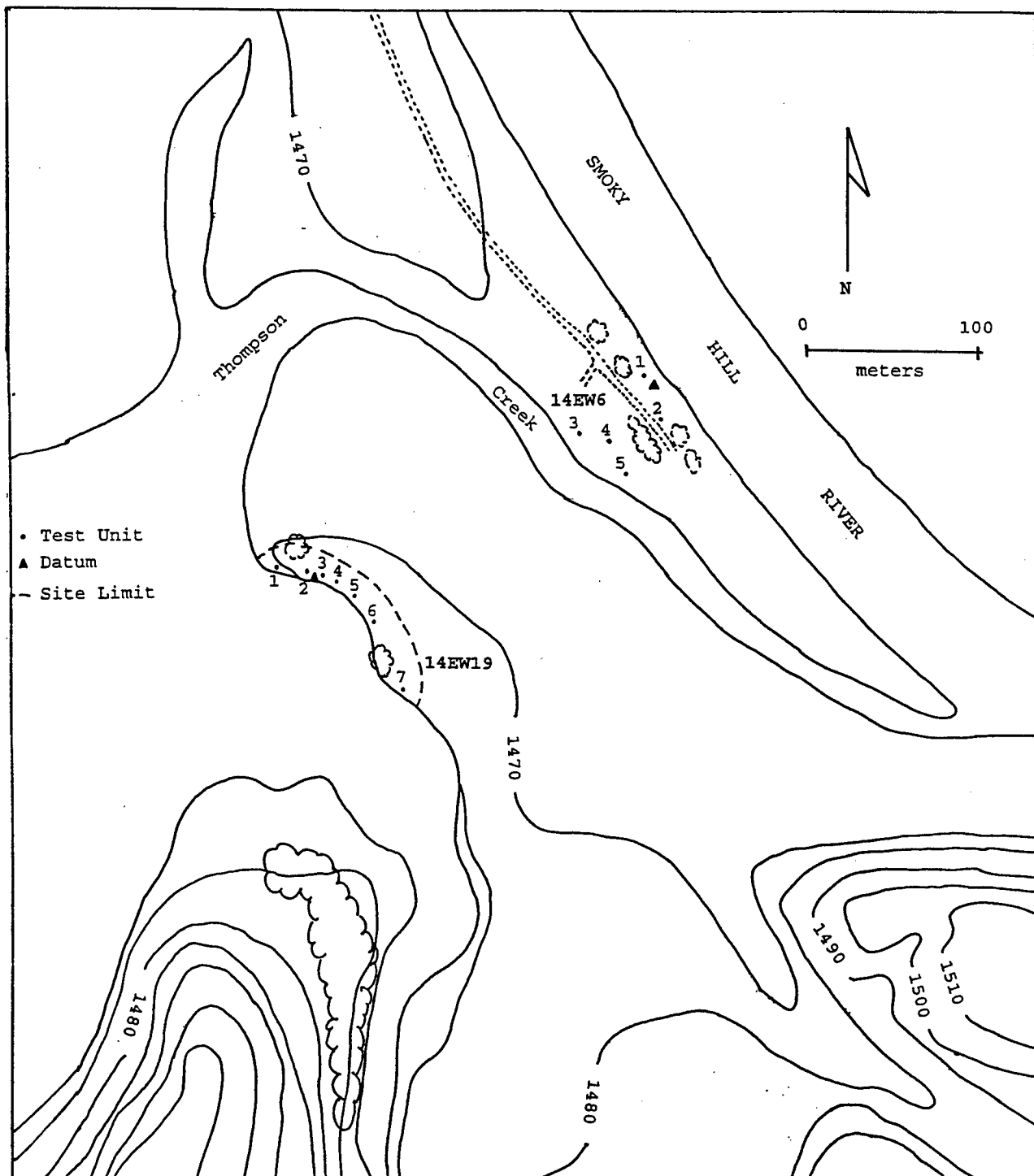


Figure 5.4. Map of 14EW6 and 14EW19 Showing Location of Test Units.



Figure 5.5. View Downstream of Smoky Hill River near 14EW6. Site datum is a few meters to photographers right. Note saturated bank.

units (TU1-2) were dug on the highest ground to depths of one meter. Three others on lower ground near Thompson Creek were dug to depths of 60cm (TU3 and TU5) and 70cm (TU4). All of the latter were stopped at or near the water table. No prehistoric artifacts were found in any unit. Evidence of recent deposition was seen in the "varve"-like stratigraphy (Figs. 5.6-7), a alternating series of silty clay layers that contained undecomposed organic material, including twigs and leaves. The only cultural material noted was two items of very recent vintage. A piece of styrofoam was found in level four (30-40cm) of TU2 and a cigarette butt was seen near the base of level three (20-30cm) in TU3.

It is interesting to note that the current topography, in which the land tapers southward to Thompson Creek, is comparable to the slope of the buried cultural horizons described by Smith (1949). This reflects the formation of a levee by the Smoky Hill River as it deposited more sediment nearer its bank during time of flood. Smith indicated the uppermost cultural horizon along the Thompson Creek side of his profile was more than three ft below the surface. Our test units found the water table well above that depth, suggesting that the horizons revealed by Smith fifty years ago are either now below the water table, have been removed by scouring during periods of overbank flow, or have experienced a combination of both processes. Given evidence of recent deposition in our test units and the fact that the site was being inundated in 1948 by "the filling of the Kanopolis Reservoir" (Smith 1949:294), we believe that at least some of the deposits have been reburied. Review of photographs (KUMA Archaeological Collections archives) taken by Smith at the Thompson Creek site, and of his profile in particular, supports this interpretation. One photo shows Smith kneeling at the base of the profile, a vertical cut ca. 2m above the stream. In 1997, one could not obtain a profile of that height anywhere in the site area, which was a maximum of ca. 1.25m (4.1ft) above the Smoky Hill River. Smith described Levels A-C as thinning northward, so they would not be expected in the vicinity of TU1-2. Excavation to the water table in that area then would probably only be sufficient to encounter the upper part of Level D, if that horizon had not been buried to an even greater depth in the past 50 years. Our discovery of undecomposed organic debris and a few recent historic artifacts in test units suggests this lower horizon is now more deeply buried. Upper horizons may have been more vulnerable to periodic scouring since Smith's work. Thus, 14EW6 cannot be fully evaluated at this time as its lower components are inaccessible. The Kansas State Historic Preservation Office (letter from Mr. Ramon Powers and Mr. Richard Pankratz, KSHPO, to Mr. Bruce C. Murray, KCD, COE, January 22, 1998) has recommended that the Corps of Engineers "continue to protect (monitor) the lower portion of the site until significance can be determined".

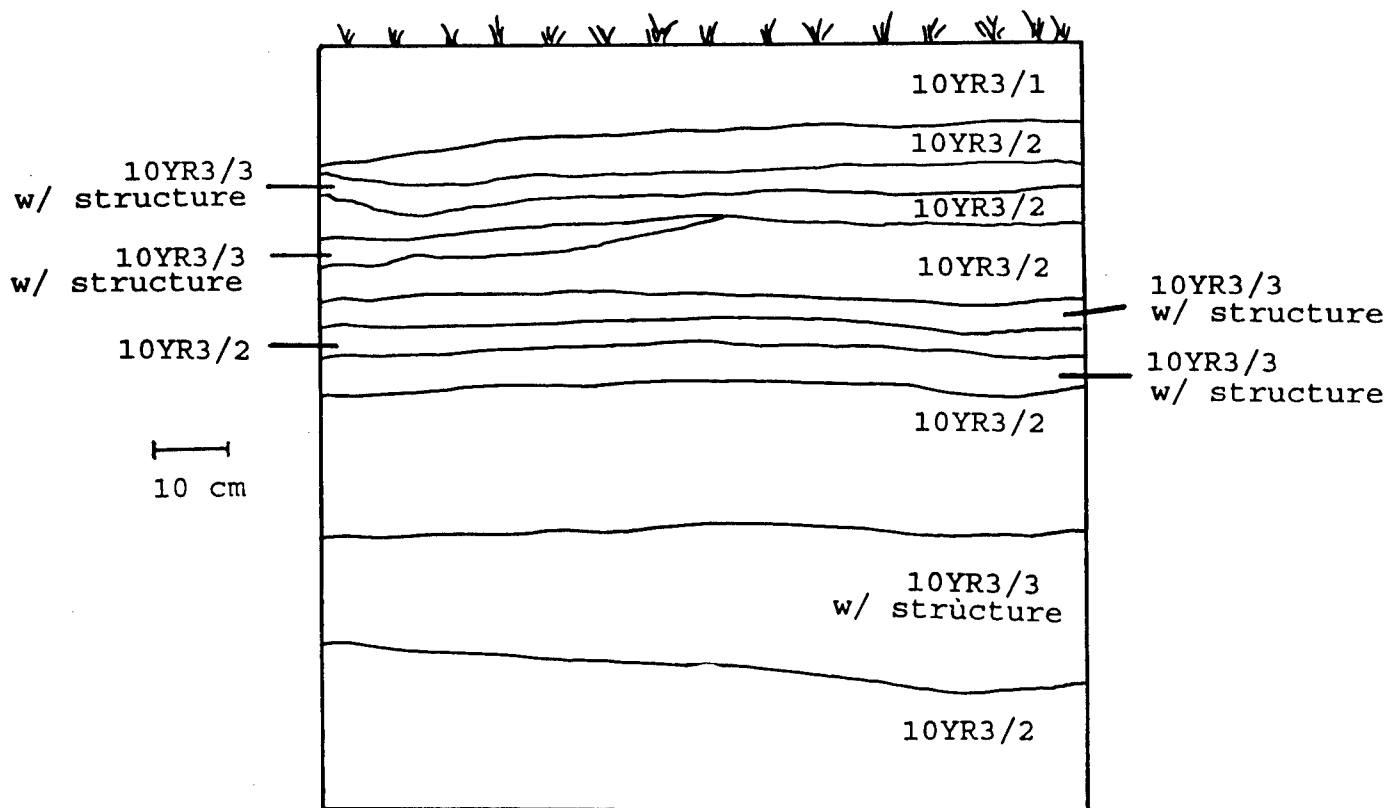
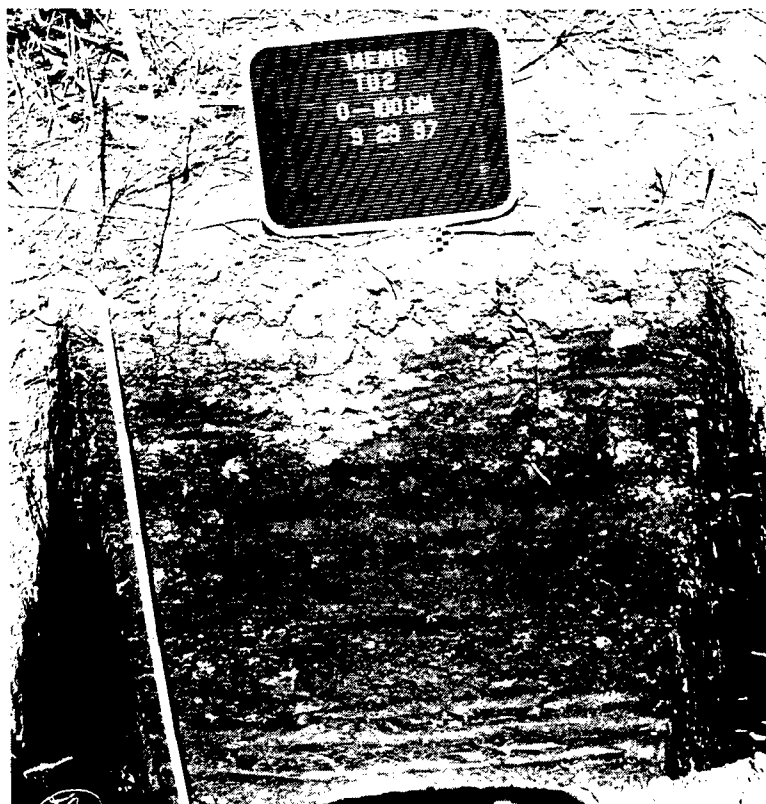
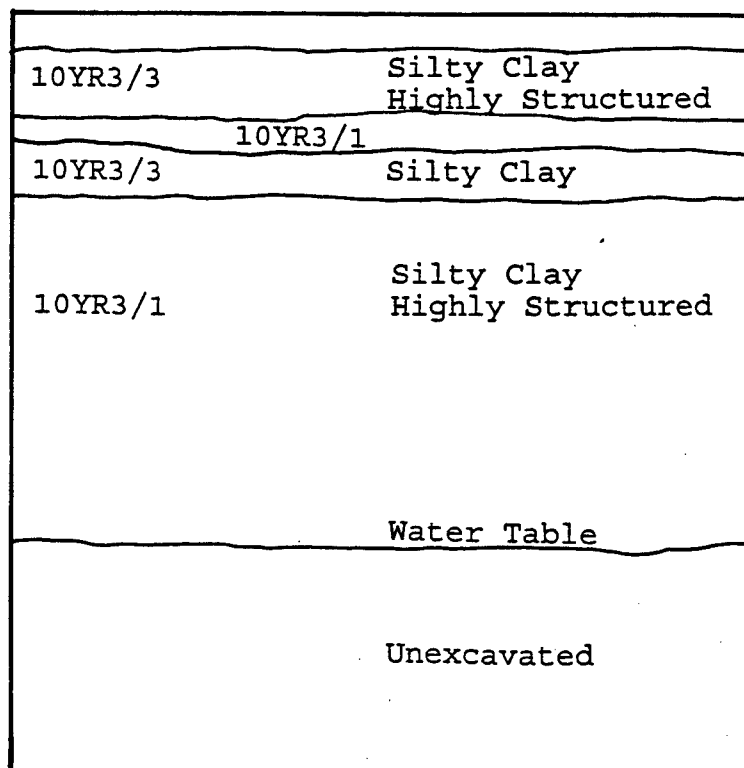
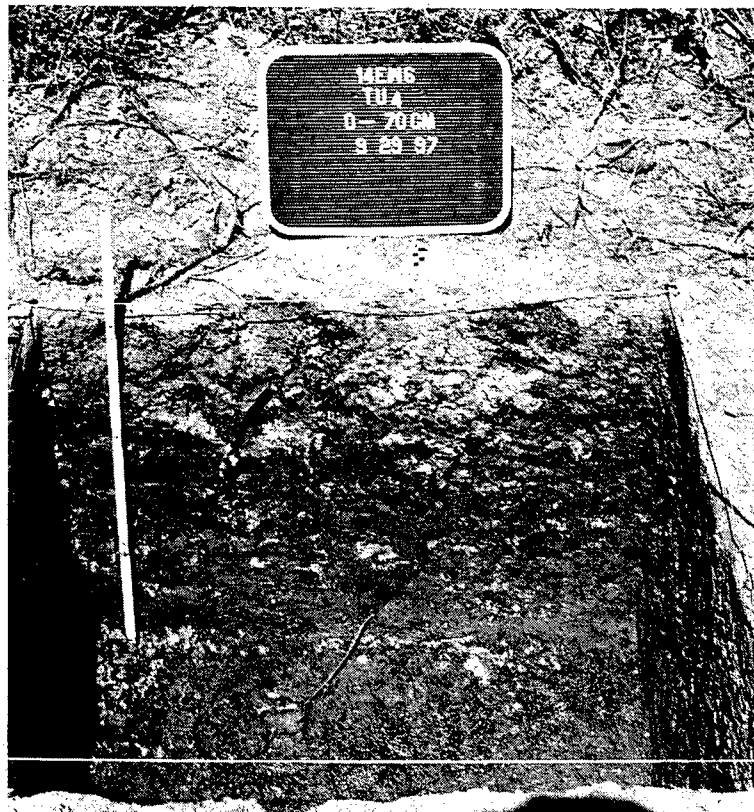


Figure 5.6. Photograph and Profile of North Wall of TU2, 14EW6.



Dry Silty Clay

Silty Clay

10 cm

Figure 5.7. Photograph and Profile of North Wall of TU4, 14EW6.

14EW19

Site Name: None
Cultural Affiliation: Woodland, Smoky Hill?, Great Bend
Topographic Setting: T-1 Terrace
Parent Material: Alluvium
Drainage: Thompson Creek
Original Surveying Agency: Smithsonian Institution
Site Size: ca. 2100m²
Surface Visibility: 0%
Slope: <3%
Ground Cover Vegetation: Few trees, thick weeds
Month/Year of Field Investigation: October 1997
Land-Use: None
Elevation: 1460-1470 ft amsl

This site is located on and below a terrace opposite Thompson Creek from 14EW6 (Fig. 5.4). The site was first recorded during the Smithsonian River Basin Surveys in 1946. It was described by Kivett (1947) as containing artifacts both on the terrace, where they were exposed by plowing, and in a dark soil horizon at a depth of three to four feet below it. Kivett (1947) includes a small photograph of the buried horizon. This first professional survey revealed cordmarked ceramics that Kivett suggested, tentatively, might be "assignable to the Upper Republican aspect". The buried stratum contained burned earth, charcoal, and lithic debris. Leaf (1977:42-44) reinvestigated the site in 1976, finding one sherd of Geneseo Plain ware, indicative of the Great Bend culture, as well as "chert, quartzite, and quartz flakes; a lot of fire-cracked rock; and some bison bone". He suggested it was a multicomponent site with evidence of Smoky Hill and Great Bend occupations and that its occupations were related to those of 14EW6.

The site was revisited in 1986-1987, when shovel tests dug across the terrace revealed its horizontal extent and inspection of a cut-bank exposed cultural material to a depth of 85cm (Schmits and Fosha 1996:100-104). Only ten artifacts, including two biface fragments, one modified chunk, one flake, four pieces of mussel shell, one piece of worked bone, and one unidentifiable animal tooth fragment were recovered. Fire-cracked rock, burned sandstone and small amounts of mussel shell were also seen on the surface and in shovel tests. The cultural affiliations of the site were suggested to be Plains Village and Great Bend, though this was based on prior findings and not on any material recovered during the survey. The site was suggested to be subject to erosion and deserving of National Register evaluation.

It is noteworthy that neither Leaf (1977) nor Schmits and Fosha (1996) recorded evidence of the buried soil horizon seen by Kivett (1947). Neither was this horizon seen during our investigations. Indeed, our test excavations revealed cultural material only to depths of ca. 70-80cm and most of the material

below 40-50cm appears to have been redeposited by plant or animal disturbance. On the southern side of the terrace, its fill has been eroded and exposed by the creek and a small tributary. The lake has pooled these drainages into a slough that does not appear to have greatly eroded the site since it was surveyed in 1986-1987, though it may have been scoured laterally to some extent during the Great Flood of 1993. The cut-bank along the Thompson Creek slough is at least three feet high, so the absence of a buried deposit may be attributable to erosion since 1947. This would also suggest that the "horizon" was not laterally extensive. Either the horizon was not horizontally continuous below the terrace and has been completely eroded, or inundation of the lake after the 1946 survey left it below the watertable.

Our investigation of 14EW19 occurred on September 30-October 2. The site was covered in dense ragweed, which we cleared for a distance of 80m along and about five meters beyond the cut-bank (Fig. 5.8). Inspection of the cut-bank profile revealed occasional pieces of mussel shell and burned sandstone at depths of 50-60cm below surface over a distance of about 100 meters. We dug seven test units beyond the cut-bank in areas where that inspection suggested cultural deposits might have the greatest density (Fig. 5.4). Table 5.2 shows the nature and vertical distribution of this material.

TU1, the northernmost and located on a lower surface of the terrace, was dug to a depth of 80cm, at which point it neared the watertable. Only a few pieces of debitage, burned sandstone and burned bone were found in the upper 30cm of this unit; lower levels to a depth of 70cm contained only one piece of shatter, a few pieces of burned sandstone (possibly hearth debris), shell and bone. Of the 118 artifacts recovered from all units combined, TU1 contributed 31 (26.3%)

TU2 was dug to a depth of one meter and it yielded 20 artifacts, or 17.0% of the total site assemblage (Fig. 5.9). The upper 30cm, which corresponds to the Ap horizon, yielded one piece of shatter and a few pieces of mussel shell and one piece of sandstone. A few pieces of debitage, mussel shell, one piece of burned sandstone and one piece of granite were recovered from 30-60cm, roughly the AB horizon. No artifacts were found below 60cm.

TU3 was excavated to a depth of one meter and it yielded 19 artifacts, or 16.1% of the total (Fig 5.9). The Ap horizon yielded a two pieces of debitage; the AB levels contained three piece of debitage and a half dozen pieces of sandstone, some of which were burned. The upper four levels also contained a few small pieces of corroded metal, evidence of recent disturbance. Plowing would account for those fragments in the upper 30cm but those in the 30-40cm level are probably evidence of bioturbation. A few artifacts were found from 60-90cm, though these may also have been carried downward by rodent burrowing.



Figure 5.8. Excavation of TU3-5 at 14EW19, View Southeast; TU2 is completed in foreground. Note dense ragweed ground cover. Shovel in the ground to the right is at the site datum; cut-bank is just to the photographer's right.

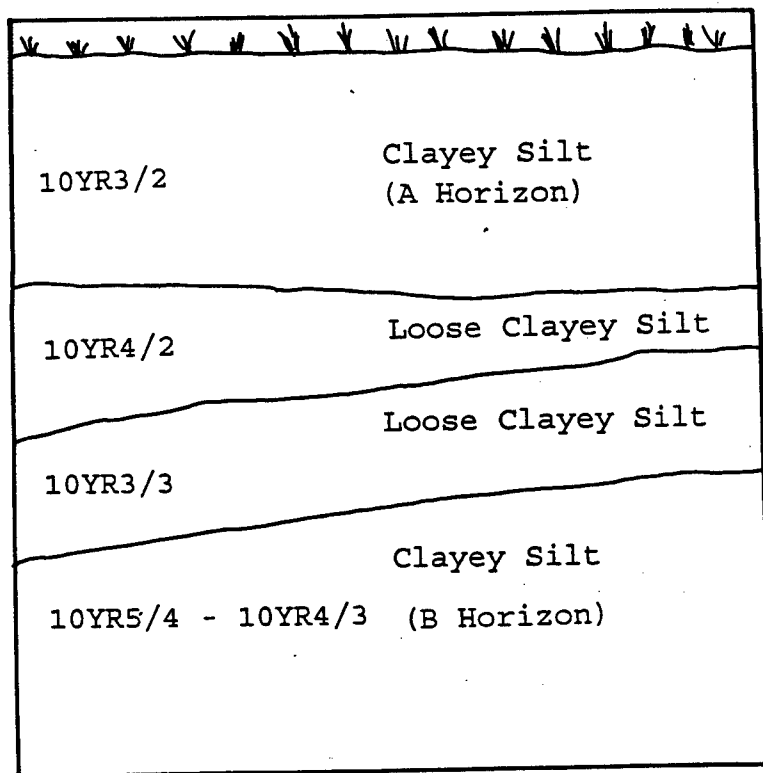
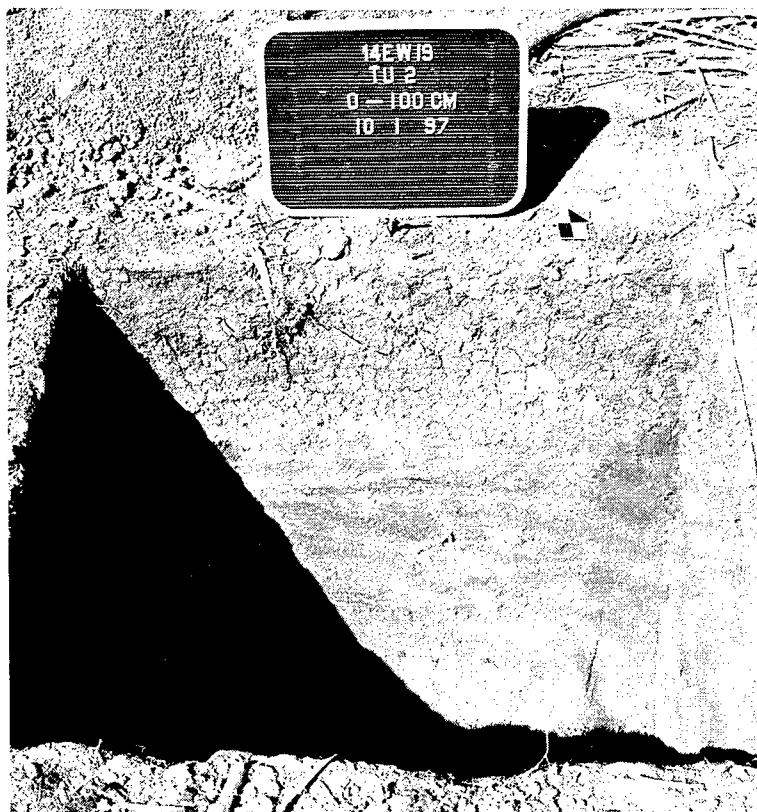


Figure 5.9. above) Photograph of North Wall of TU2, 14EW19;
below) Profile of TU3, 14EW19.

Table 5.2. Cultural Material from Test Units at 14EW19.

	<u>TU1</u> <u>0-10</u>	<u>TU1</u> <u>10-20</u>	<u>TU1</u> <u>20-30</u>	<u>TU1</u> <u>40-50</u>	<u>TU1</u> <u>50-60</u>
Bodysherd	-	-	-	-	-
Projectile Point	-	-	-	-	-
Flake	-	1	1	-	-
Chip	1	1	-	-	-
Shatter	-	-	-	-	-
Bone	-	-	1	-	-
Burned Bone	-	-	-	1	-
Shell	-	-	-	-	1
Sandstone	-	-	-	-	7
Burned stone	2	3	-	1	2
Burned Earth	-	-	1	-	-
Cobble	-	-	-	-	-
Quartzite	-	-	-	-	-
Burned Quartzite	-	-	-	-	-
Granite	-	-	-	-	-
Hematite	-	-	-	-	-
Burned Rock	-	-	-	-	-
Shell Casing	-	-	-	-	-

Table 5.2. Cultural Material from Test Units at 14EW19 (continued).

	<u>TU1</u> <u>60-70</u>	<u>TU2</u> <u>10-20</u>	<u>TU2</u> <u>20-30</u>	<u>TU2</u> <u>30-40</u>	<u>TU2</u> <u>40-50</u>
Bodysherd	-	-	-	-	-
Projectile Point	-	-	-	-	-
Flake	-	-	-	-	2
Chip	-	-	-	-	-
Shatter	-	1	-	-	2
Bone	-	-	-	-	-
Burned Bone	-	-	-	-	-
Shell	4	3	5	4	-
Sandstone	2	1	-	-	-
Burned stone	1	-	-	-	-
Burned Earth	-	-	-	-	-
Cobble	-	-	-	-	-
Quartzite	1	-	-	-	-
Burned Quartzite	-	-	-	-	-
Granite	-	-	-	-	-
Hematite	-	-	-	-	-
Burned Rock	-	-	-	-	-
Shell Casing	-	-	-	-	-

Table 5.2. Cultural Material from Test Units at 14EW19 (continued).

	<u>TU2</u> <u>50-60</u>	<u>TU3</u> <u>10-20</u>	<u>TU3</u> <u>20-30</u>	<u>TU3</u> <u>40-50</u>	<u>TU3</u> <u>50-60</u>
Bodysherd	-	-	-	-	-
Projectile Point	-	-	-	-	-
Flake	-	-	-	1	2
Chip	-	1	1	-	-
Shatter	-	-	-	-	-
Bone	-	-	-	-	-
Burned Bone	-	-	-	-	-
Shell	-	-	-	-	-
Sandstone	-	-	-	3	-
Burned stone	1	-	-	-	3
Burned Earth	-	-	-	-	-
Cobble	-	-	-	-	-
Quartzite	-	-	-	-	-
Burned Quartzite	-	-	-	-	-
Granite	1	-	-	-	-
Hematite	-	-	-	-	-
Burned Rock	-	-	-	-	-
Shell Casing	-	-	-	-	-

Table 5.2. Cultural Material from Test Units at 14EW19 (continued).

	<u>TU3</u> <u>60-70</u>	<u>TU3</u> <u>70-80</u>	<u>TU3</u> <u>80-90</u>	<u>TU4</u> <u>10-20</u>	<u>TU4</u> <u>20-30</u>
Bodysherd	-	-	-	-	-
Projectile Point	-	-	-	-	-
Flake	-	-	1	-	-
Chip	-	-	-	-	2
Shatter	-	-	-	-	-
Bone	-	-	-	-	-
Burned Bone	-	-	-	-	-
Shell	-	-	-	6	12
Sandstone	-	1	-	-	-
Burned stone	-	1	2	-	-
Burned Earth	-	-	-	-	-
Cobble	-	-	-	-	-
Quartzite	-	-	-	-	-
Burned Quartzite	-	-	-	1	-
Granite	-	-	-	-	-
Hematite	-	-	-	-	-
Burned Rock	3	-	-	-	-
Shell Casing	-	-	-	-	-

Table 5.2. Cultural Material from Test Units at 14EW19 (continued).

	<u>TU4</u> <u>30-40</u>	<u>TU4</u> <u>40-50</u>	<u>TU4</u> <u>50-60</u>	<u>TU4</u> <u>60-70</u>	<u>TU5</u> <u>30-40</u>
Bodysherd	-	-	-	-	1
Projectile Point	-	-	-	-	-
Flake	-	-	-	-	-
Chip	4	-	-	-	-
Shatter	-	-	-	-	-
Bone	-	-	-	-	-
Burned Bone	-	-	-	-	-
Shell	-	-	-	-	-
Sandstone	-	-	1	1	-
Burned stone	4	-	4	-	-
Burned Earth	-	-	-	-	-
Cobble	-	-	-	-	-
Quartzite	-	-	-	-	-
Burned Quartzite	-	1	-	-	-
Granite	-	-	-	-	-
Hematite	-	-	-	-	-
Burned Rock	-	-	-	-	-
Shell Casing	-	-	-	-	-

Table 5.2. Cultural Material from Test Units at 14EW19 (continued).

	<u>TU7</u> <u>10-20</u>	<u>TU7</u> <u>20-30</u>	<u>TU7</u> <u>30-40</u>	<u>TU7</u> <u>40-50</u>
Bodysherd	1	-	1	-
Projectile Point	-	-	-	1
Flake	-	-	-	2
Chip	-	1	-	-
Shatter	-	-	-	-
Bone	-	-	-	-
Burned Bone	-	-	-	-
Shell	-	-	-	-
Sandstone	2	-	-	-
Burned Stone	1	-	-	-
Burned Earth	-	-	-	-
Cobble	-	-	-	-
Quartzite	-	-	-	-
Burned Quartzite	-	-	-	-
Granite	-	-	-	-
Hematite	-	-	-	1
Burned Rock	-	-	-	-
Shell Casing	1	-	-	-

TU4, dug to a depth of 70cm, yielded 36 artifacts, 30.5% of the total. Half of these were small fragments of mussel shell found in the Ap horizon. The cultural material was fairly evenly distributed throughout the upper 60cm and none was found below that depth.

TU5, dug to 70cm, yielded but a single artifact, though it was the most surprising find at the site. This is a cordmarked, calcite-tempered body sherd ca. 20cm² in size (mass=25.5gms) that was found in level 4 (30-40cm). The calcite-tempered sherd is intriguing as it points to a heretofore unrecorded Woodland (Keith variant) occupation. It raises the possibility that the cordmarked pottery tentatively assigned by Kivett (1947) to the Upper Republican culture, reinterpreted by Leaf (1977) as Smoky Hill ware, and later by Schmits and Fosha (1996:102) as Plains Village pottery, may not be Late Prehistoric material at all. Indeed, Kivett (1947:6) stated that "the limited sample of pottery ... makes any definite conclusions as to cultural affinities impossible". Thus, it is possible that 14EW19 may not have been occupied by Late Prehistoric people but, like the nearby Thompson Creek site (see 14EW6 above), by Woodland and Great Bend groups. Only examination of the original ceramic assemblage or further excavation of the site could verify this, but given the sherd from TU5, the cultural affiliation of 14EW19 must be revised to include a Keith variant component.

TU6 was abandoned at a depth of only ten cm (that one level did not contain any artifacts) in favor of TU7, the southernmost unit. TU7 was completed at a depth of 60cm and it yield 11 artifacts, or 9.3% of the total site assemblage. One small sherd of plain, red-filmed (?) ware was recovered at a depth of 10-20cm and another of the same material at 30-40cm. Only two small flakes were found, one in level three and another in level five. The sherds are very small (less than two cm²) but may be additional evidence of the Great Bend occupation inferred from a similar sherd of Geneseo Plain ware found in 1976 (Leaf 1977). Level 2 of this unit also yielded the brass case of a bullet, identified by Greg Jackson as a center-fire, externally primed shell of a .455 caliber, II Webley Revolver. This artifact attests 20th century activity at the site, perhaps some recreational target shooting.

Though each test unit contained some cultural material (Table 5.2), their meager yields preclude recommendation of National Register eligibility. Indeed, the fact that the small samples of lithic and ceramic material were evenly distributed throughout nearly all unit/levels (though none was found below 90cm) precludes preliminary recognition of discrete cultural horizons. Of the 118 artifacts recovered from all units, 50 (42.4%) were found in the upper 30cm (roughly equivalent to the Ap horizon), 51 (43.2%) were found from 30-60cm, which corresponds to the AB horizon, and 17 (14.4%) were found below 60cm, in the B horizon.

It is suggested that where the deposits were tested they have been disturbed by animal or plant activities and therefore contain no stratigraphic integrity. This is also suggested by the recovery of sherds of both Keith variant and Great Bend wares at the same depth (30-40cm), though this inference is based on a very meager ceramic sample. Because this site has not yielded a sufficient quantity of artifacts to firmly identify its cultural affiliations, lacks any identifiable structures, features or activity areas from which to adequately infer its function with respect to past settlement and subsistence patterns, and appears to lack stratigraphic integrity, it is not possible to recommend it for nomination to the National Register of Historic Places.

Discussion: Research Questions

Few of the research questions provided by the Corps of Engineers in the Scope of Work can be addressed with the relatively meager amount of data recovered from the tested sites. Indeed, one of them (14EW6) did not yield any artifacts and is probably more deeply buried by recent deposits than it was when it was investigated by Smith (1949) in 1948. Thus, the following discussion of the research questions concerns information obtained at the other two sites, 14EW3 and 14EW19.

Several of the general research questions presented in chapter 2 cannot be addressed with the data recovered during the project. Among these are those concerning features (hearths, storage pits, etc.), permanent houses or villages, modified bone, trade, or reliance on plant foods (domestic and wild). No evidence was found at 14EW3 or 14EW19 that could be used to address these questions. We can provide limited responses to a few of the other general research questions.

Neither of the two sites that yielded artifacts appear to be stratified. While 14EW19 contained artifacts of at least two cultures (Keith and Great Bend) to a depth of at least 60cm, those diagnostic of them, limited to three sherds, occur at about the same level. No cultural or natural stratification was apparent, rather a small assemblage of comparable material (debitage, mussel shell, burned and unburned sandstone) was distributed throughout a soil horizon characteristic of the McCook silty clay loam (Barker and Dodge 1989:20). The upper 30cm of the site has been disturbed by plowing. Evidence of disturbance by plant growth and rodent burrowing was seen in the mixing of Ap and B horizons in a transitional AB horizon from ca. 30-60cm.

At 14EW3, the A horizon has been mantled by what is now a relatively thin (ca. 10cm) sheet of lake deposited sand. While this sandsheet provides some protection to the underlying cultural horizon, it is likely that the latter has also experienced some

scouring. That artifacts from the A horizon have obviously been transported downward into the AB horizon is indicated by the drop off in artifact frequency below 30cm and evidence of rodent burrowing and tree growth. Other than one body sherd from 30-40cm in TU2 at this site, the only diagnostic artifacts of Late Prehistoric and/or Great Bend (e.g., arrow point, end scrapers, pottery) and Woodland components (Keith variant pottery) were recovered from a disturbed context on the beach.

With respect to site functions, the relatively small artifact assemblages from both sites appear to point to short-term occupation, supporting the extractive-camps function inferred by earlier investigators. Both sites served in this manner during different times- Woodland, Late Prehistoric, and Protohistoric. The greater variety of artifacts from 14EW3 points to a wider range of activities, though this could not have been inferred from test unit data alone. The following activities are primarily based on artifacts recovered from the beach at that site: chipped stone tool manufacture and maintenance (debitage, hammerstones), hunting and game processing (point fragments, animal bone), hide preparation (scrapers, perforator), and food preparation (hearths, mussel shells, animal bone, grinding stones). Artifacts found by previous investigators at 14EW19 suggest comparable activities occurred there.

Lithic raw materials appear to have been procured beyond the project area, though the number of pieces of chipped stone debris from 14EW19 is too small to address this question adequately. The grab sample of chert artifacts from the beach at 14EW3 includes Niobraraite and chalcedonies that must have been procured in the High Plains west of the site as well as Permian cherts from the Flint Hills to the east of Kanopolis. If one were to judge this material in the light of the site's extent as it is known now, it could be interpreted as evidence of transitory encampment on Alum Creek during the east-west movements of ceramic-age populations between those two regions. However, when the site was first recorded (Kivett 1947) it was described as significantly more extensive. Consequently, we cannot adequately interpret the duration of settlement at 14EW3 from the data recovered in 1997.

While hunting and gathering can be inferred from bone and shell at both sites, the quantity of this material is so scant that the research questions concerning faunal procurement cannot be answered. One complete tooth and a thick, long bone shaft fragment point to bison hunting. The complete, left mandibular second molar of this animal suggests the animals were procured nearby, facilitating transport of meat-poor portions such as crania.

None of the research questions concerning the Plains Woodland period can be answered with the data at hand, neither does any site appear to offer their potential resolution. The origin and development of the Keith variant, presence of a Hopewellian

complex, and settlement-subsistence patterns of Woodland populations cannot be determined on the basis of the current assemblages. Of all the sites, perhaps Thompson Creek (14EW6) could have provided such information. Unfortunately, its potential was not fully tapped 50 years ago when it might have been possible to obtain it.

Of the three questions posed regarding Late Prehistoric (Plains Village) components, only one can be addressed regarding data from 14EW19. It is ironic that it is the only one that specifically mentions one of the tested sites. Indeed, of all the questions presented in the Scope of Work, it has proved to be not only the most relevant but the most prescient and, thus, worthy of restating here:

A Plains Village component at 14EW19 has been tentatively identified as a Smoky Hill Phase (sic) occupation based on the cordmarked pottery? (sic) Is this an accurate cultural placement of the site?

As discussed in the appropriate site section above, the discovery of one relatively large body sherd of Keith variant pottery at 14EW19, in conjunction with Kivett's (1947) tentative cultural assignment of cordmarked sherds found in 1946 to the Upper Republican culture, raises the possibility that the latter affiliation is in error. There is no doubt that the sherd found in 1997 is Keith ware, given the calcite temper, carefully executed parallel cordmarking, and relative thickness (9.3mm). At the very least, a Keith variant component must now be recognized for the site. Whether the tentatively identified CPT component must be changed is, however, unclear at this time. The original site assemblage collected at the time of the Smithsonian Institution Missouri River Basin Survey investigation must be reviewed in order to make that determination.

It is notable that when Kivett conducted his survey, very little was yet known about the Keith variant. Excavation of the Woodruff Ossuary in Phillips County, Kansas, the type site of the variant, occurred the same year as the SIMRB survey of Kanopolis Reservoir and was done by Kivett, J. Mett Shippee (who helped Kivett survey Kanopolis), and A. T. Hill. Kivett (1953:130-137) did not define the Keith variant until several years later, though his comparative data base included material from sites in Nebraska that had been excavated in the 1930s and early 1940s. The most distinguishing trait of the Keith variant, particularly with respect to other Woodland complexes in the Central Plains (e.g., Valley, Sterns Creek) was the pottery, called Harlan Cord-Roughened, of which the single sherd from 14EW19 is an example. It is possible that the small sample of pottery found by Kivett and Shippee at 14EW19 was not recognized by the former as Harlan Cord-Roughened at that time.

Neither of the questions concerning the Great Bend culture can be addressed with the material collected during the 1997 project. One concerned population movement to Kanopolis sites from other Great Bend culture areas (e.g., Marion, Rice, McPherson, or Cowley Counties, Kansas) and the other concerned the nature and extent of trade between the occupants of these sites and other indigenous and Euroamerican populations. No evidence of intraregional population movement or trade was found.

In summary, few of the research questions given in the Scope of Work can be addressed with information acquired at 14EW3, 14EW6, and 14EW19 and future excavation would not greatly enhance that possibility. This underscores the recommendation that none is eligible for nomination to the National Register of Historic Places.

Chapter 6

SHORELINE SURVEY (1463-1465 ft amsl)

Brad Logan

Introduction

The corridor of survey between the elevations of 1463 and 1465 ft amsl, that is from the edge of the lake at the time of survey to a point along the shore that was two feet higher in elevation, was generally less than three meters wide and never exceeded a width of five meters. Thus, a single transect by a survey team of two persons was sufficient to cover the terrain that would be inundated by the proposed raising of the multipurpose/flood control pools. The survey corridor and the location of sites and find spots encountered along it are shown on Figure 1.1. The shoreline survey, which covered an area of about 410 acres, was undertaken October 5, 14-16, and 19. A total of 403 person hours was devoted to the survey by a crew of two to five persons. The Principal Investigator (PI) was in the field throughout the survey. Survey on October 5 was by a crew of five persons. On that date, one team of two persons, under the direction of William E. Banks, surveyed the northern half of Kanopolis State Park (Horsethief Area) and a second team of three persons, under the direction of the PI, surveyed the southern half of the State Park and Venango Park. The same teams then each surveyed one-half of the shoreline along the Kanopolis State Park (Langley Point Area).

On October 14-16, survey was done by the PI and Banks. The portion of shoreline covered on each date is as follows: October 14- from the Langley Point Area to the Yankee Run cabin area; October 15- from Yankee Run cabin area to a point about 400m north of the Buckeye Fishing Access; October 16- from the west side of Alum Creek cove to Kanopolis State Park (Horsethief Area).

Pedestrian survey entailed walking along the shoreline within the elevations specified, to the extent that such a traverse did not take a team or person across saturated silts or other deposits that were obviously close to the water table. All visible artifacts, particularly those of prehistoric age, were noted. Non-diagnostic prehistoric finds were not collected, though their locations were recorded with a GPS receiver. Only two tools were collected, one from a findspot and another from a previously recorded site.

On October 19, the PI and Greg Jackson used a Jon boat to survey the both banks of the river for a distance 1.75 miles

upstream and 1.25 miles downstream from the Buckeye Fishing Access. The need for a boat survey was assumed after it became apparent that pedestrian survey of the banks of the Smoky Hill River above Alum Creek was impractical. More than two miles of the southern shoreline in the latter area were crossed on October 15, though this terrain was surveyed again from the Jon boat on October 19.

Findings and Interpretations

Most of the survey corridor along the southern shore from the dam to Yankee Run cabin area park and along the northern shore from the dam to Alum Creek is exposed sandstone and shale, with no archaeological potential (other than petroglyphs, none of which were seen between the 1463-1465 elevation interval). Soil was exposed at the mouths of and upstream along tributaries, including Bluff Creek, Alum Creek, and Thompson Creek. However, inspection of those exposures never revealed any cultural material. The only pre-lake (i.e., discounting the expected assortment of recreational artifacts such as fishing tackle, etc.) cultural material that was recorded during the survey occurred at five findspots, one of which is not located within the survey corridor. The latter (Findspot 5) is the tip of a biface that was found within an access road near Buckeye Fishing access and less than 100 meters east of 14EW174. The latter site, now within a milo field, may have been the original source of this find, which might have been transported from there on the tires of farming machinery.

Three of the findspots are obviously associated with, and undoubtedly transported via wave-action from, sites now inundated a short distance off-shore. All consisted of pieces of debitage associated with wave-formed strand lines of similarly sized gravels on sandy beaches. Findspot 1 was a single flake found less than 100 meters west of one of the recorded localities of 14EW15; Findspots 3, two pieces of debitage, and 4, a half dozen pieces of debitage, were a like distance upstream and downstream of one of the localities of 14EW16 (Fig. 6.1). Findspot 2 was an isolated end scraper of fine-grained, white quartzite that was found on the beach in the Yankee Run Point Public Use Area. Survey in its vicinity failed to reveal any other prehistoric artifacts. Its presence may be due to discard by a recent collector or by its transport via wave action from an unrecorded site off-shore.

Only one previously recorded site was encountered during the survey. This is site 14EW12, evidence of which was found in the form of a dozen pieces of debitage and one scraping tool on strand lines along the beach below Alum Creek (Fig. 6.1). None of these finds appeared to be in situ. Inspection of adjacent terrain, including the wave-cut face of the adjacent soil of an upland slope and the surface of that land, failed to reveal any artifacts. It was apparent that these finds were redeposited by wave action from the site, which is now inundated off-shore. GPS readings were



Figure 6.1. above) View North of Findspot 4. Indian Hill (14EW1) is across the lake in photo center; below) Will Banks takes GPS reading at artifact concentration from 14EW12. Dead trees in left background mark 14EW3.

collected for the approximate "center of mass" of the debitage from 14EW12, and also for each of the findspots. These locations have been plotted on U.S.G.S. topographic maps and mylar overlays of aerial photographs supplied to the Kansas City District, U.S. Army Corps of Engineers.

One of the most significant findings of the survey project was discovery of the great extent of aggradation in the lake upstream from the Alum Creek area. Indeed, alluviation of the lake and river bottom has proceeded so far as to have created new land below Alum Creek cove (Fig. 6.2). In that area, the Smoky Hill River has in fact reappeared within the lake, where it is bordered on both banks by broad expanses of natural levee deposits that do not appear on the U.S.G.S. Carneiro, Kansas quadrangle topographic map. That map, which was photorevised in 1979, shows only water at an elevation of 1459 ft. By the time of survey, when the floodpool was at an elevation four feet higher than that shown on the topographic map, silting of the lake had created several acres of terrain that could not contain in situ, pre-1979 cultural deposits. Consequently, that terrain, which consisted primarily of saturated silts that would have been dangerous to traverse, was not surveyed. This terrain does appear on the aerial photographs, taken the year after the Great Flood of 1993, that were used to produce the mylar overlays provided to the COE.

Our survey did result in the discovery of one historic site that testifies to the extent of floodplain aggradation along the Smoky Hill River. This site, recorded as 14EW38, is shown on the Carneiro Quadrangle as an isolated historic structure adjacent to the river in an area that has been modestly developed by the COE as the Buckeye Fishing Access. Buckeye, a small earthen parking area with a few trash barrels, was our put-in and take-out point on Sunday, October 19, when the banks of the stream were surveyed from a Jon boat. A portion of what must be the concrete foundation of the structure shown on the map was found at the point where we landed after completion of the survey (color photographs of this foundation have been supplied to the COE). This slab is almost completely buried by bank deposits that slope sharply from a few cm to more than one meter thick. The slab is now less than two feet above the river, which indicates that it will be inundated following the proposed raising of the floodpool. This structure does not appear to be significant and no NRHP evaluation is recommended. The presence of this feature is enlightening, however, because it shows how: 1) a structure of relatively recent age (probably less than 100 years) has become buried to a great depth in a short time by over-bank deposition, and 2) the river has aggraded its channel several feet to come within less than a meter of submerging it.



Figure 6.2. above) Will Banks overlooks lake from bluff just beyond the southern end of 14EW13, view SSE. Note new land on both sides of re-emerging Smoky Hill River in center; below) View SSE of lake showing re-emerging confluence of Alum Creek and Smoky Hill River near center of photo.

Conclusions

No in situ prehistoric cultural materials were encountered in the survey corridor and only one historic site was recorded therein. The few prehistoric artifacts seen during the survey, and recorded as findspots, all appear to have been deposited through wave-action from sites now inundated a short distance offshore. Similar findspots, including several a few meters from some of those described above, were recorded during the survey of 1976. For example, FS76-1, FS76-2, and FS76-3, found during that survey and located 500m+ down the shoreline from FS97-1, were described as "scatter from previously recorded sites" (Leaf 1977:13). The first of these consisted of one projectile point fragment and a chert flake; the second consisted of an end scraper fragment, four flakes, and three chunks; and the third was a quartzite blade fragment. All were attributed to 14EW15, as we have done here for FS97-1. Similarly, FS97-3 and FS97-4 have been attributed to redeposition of artifacts from 14EW16. Of those findspots along the shoreline, only FS97-2 cannot be associated with a previously recorded site, but it is clearly out of its original context (i.e., ex situ).

Evidence of erosion along the lower portion of the lake was noted during the survey, but this occurs in areas that are predominantly bedrock (Dakota Formation sandstone and shale). The upper portion of the lake within the survey area consists of recently deposited silt and, in the lake itself, of emerging new terrain along the Smoky Hill River and Alum Creek. None of this land could contain in situ cultural materials that pre-date inundation of the lake. Consequently, no properties were found during the survey that can be considered potentially eligible for nomination to the National Register of Historic Places.

Chapter 7

CONCLUSIONS AND RECOMMENDATIONS

Brad Logan

Test excavations at 14EW3, 14EW6, and 14EW19 indicate none of the sites contains the quantity or density of cultural materials, the presence of subsurface features and activity areas, and/or the stratigraphic integrity required for nomination to the National Register of Historic Places. None appears to have the potential to address most of the research questions provided in the Scope of Work. While the proposed increase in the lake level will further inundate 14EW3, it will not significantly impact the deposits at 14EW19, and will only bury more deeply any deposits at 14EW6 now below the watertable. Most of the artifacts recovered at 14EW3 were found ex situ on the beach. Test units yielded a very small assemblage from an area believed to be peripheral to the site, which is extensively flooded at the current lake level. While a slightly larger artifact assemblage was obtained at 14EW19, it is still modest and lacks the stratigraphic integrity essential for distinguishing its cultural components. One finding of note at this site is a sherd of Keith variant ware that suggests the previous, tentative recognition of a Late Prehistoric component may be incorrect. The site form for 14EW19 has been modified to incorporate this finding. No evidence of the deeply buried cultural horizon found during the first professional survey of this site (Kivett 1947), and not seen during subsequent investigations (Leaf 1977; Schmits and Fosha 1996), was found during the project.

The construction of the dam and the occurrence of several floods since then have resulted in considerable aggradation above Alum Creek. The process has buried any prehistoric deposits below the current watertable. The proposed water storage reallocation will not result in any impact to that area.

No sites eligible for the National Register of Historic Places will be affected by a possible permanent raise in multipurpose pool elevation from 1463 to 1465 ft amsl. Survey along the proposed impact corridor resulted in the discovery of five findspots and one historic site (14EW38). None of these resources is considered significant. One of the findspots is beyond the impact area; four others can be attributed to erosion and redeposition of artifacts from sites inundated offshore. It appears that the proposed raising of the lake will only erode recent alluvium along the upper portion of the surveyed area, that is to the Alum Creek confluence, and previously eroded bedrock within the survey corridor below that point.

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Glossary

Daub- pieces of grass- or twig-impressed, fired or accidentally baked clay.

Dendrochronology- a dating technique that is based on seasonally formed, annual growth rings on trees; the chronology is based on an overlapping series of several trees from different times in a region that extend from a known, or historic year, into the past.

Ex situ- out of place, or context

In situ- in place, or context

Maul- a groundstone tool, generally full-grooved, with battered ends that was used for pulverizing plants or animal bones.

Midden- a deposit of cultural material that accumulated through the intentional dumping or discard of trash.

Monotypic- an assemblage (lithic, ceramic, etc.) that is composed of artifacts that can be identified as belonging to one type.

Phase- an archaeological taxonomic term defined by Willey and Phillips (1958:22) as a "unit possessing traits sufficiently characteristic to distinguish it from all other units similarly conceived, whether of the same or other cultures or civilizations, spatially limited to the order of magnitude of a locality or region and chronologically limited to a relatively brief interval of time".

Polymorphous- exhibiting many forms or shapes.

Sedentism- the condition of being sedentary, or settled in one place.

Strand- a shore or beach; a strand line marks a boundary between a shore and a body of water and several lines may be formed by tides or the fluctuating surface of a body of water; such lines may be marked by detritus, such as drift wood or pebbles.

Transhumant- adjective of transhumance, the seasonal movement of cattle or other animals, generally used by anthropologists with regard to pastoral peoples.

Variant- an archaeological taxonomic term defined by Lehmer (1971:32) as "a unique and reasonably uniform expression of a cultural tradition which has a greater order of magnitude than a phase, and which is distinguished from other variants of the same tradition by its geographic distribution, age, and/or cultural content".

Varve- Seasonal deposits of coarse sediments laid down in lakes after spring melts that form layers of alternating sediment grains; a varve represents one year and a series of them may form a chronology that can be used by archaeologists for dating purposes.